MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

HEALTH SCIENCES LIBRARY
OF THE
UNIVERSITY OF NORTH CAROLINA

History Room

J. Vance McGougan M.D.

DIVISION OF HEALTH SCIENCES LIBRARY

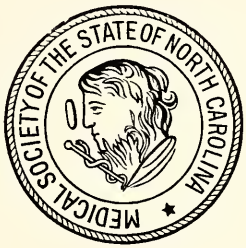
TRANSACTIONS

OF THE

MEDICAL SOCIETY

OF THE

State of North Carolina



SEVENTY-FIRST ANNUAL SESSION

HELD AT

RALEIGH, NORTH CAROLINA

APRIL 5, 6, 7, 1924

PRESIDENT
J. V. McGOUGAN, M. D., FAYETTEVILLE

SECRETARY-TREASURER
L. B. McBRAYER, M. D., F. A. C. P., SOUTHERN PINES

REPORTER
MISS MARY ROBINSON, RALEIGH

1924
BROWN-MORRISON CO., INC.
LYNCHBURG, VA.

COMMITTEE ON PUBLICATION

Dr. L. B. McBrayer, *Chairman* ..... Southern Pines
Dr. H. C. Brockmann ..... High Point
Dr. M. L. Townsend ..... Charlotte

"It is understood that the Society is not to be considered as endorsing all the views and opinions of authors of papers published in the Transactions of the Society."—*Extract from By-Laws, Chapter 10, Section 8.*

CONTENTS

See Index, p. 556 et seq.

PAGE

J. Vance McGougan, M. D. ..... *Frontispiece*
Committee on Publication ii
Early History of the North Carolina Medical Society from Organization to 1804 vii
History of the Medical Society of the State of North Carolina from 1849 to 1924 viii
Past Members of Medical Examiners of the State of North Carolina xii
Board of Medical Examiners, 1920-1926 xii
Roster of Members North Carolina State Board of Health, 1877 to 1924 xiii
State Board of Examiners for Nurses xiv
Status of Society Membership by Counties, 1910 to 1924 xv
Honorary Fellows, North Carolina Medical Society xvii
Honorary Members, North Carolina Medical Society xviii
Officers of Society, 1923-1924 xix
Officers of Society, 1924-1925 xix
Councillors, 1924-1927 xix
Chairmen of Sections, 1925 xix
Delegates xx
Committees xx
Resume of Program 1
Program of General Sessions 1
Section Meetings 3
Transactions of the Seventy-First Annual Session 9
Opening Exercises 9
Invocation—*Rev. W. A. Stanbury* 9
Welcome from the Mayor—*Hon. Eugene E. Culbreth* 10
Welcome from Wake County Medical Society—*H. M. Bonner, M. D.* 12
Welcome from the City of Raleigh—*Hon. R. N. Simms* 12
Responses to Addresses of Welcome—*Seavy Highsmith, M. D.* 17
President's Address—*J. V. McGougan, M. D.* 19
The Medical Aspect of Mental Defectives—*James K. Hall, M. D.* 29
The Legal Aspect of Medical Defectives—*Hon. J. C. B. Ehringhouse* 34
Senator's Address—*Royal S. Copeland, U. S. S.* 42
Conjoint Sessions of the North Carolina Medical Society and State Board of Health 51
Annual Report of the Secretary of the North Carolina State Board of Health 51
Report of Committee on Obituaries—*J. V. McGougan, M. D.* 63
Report of the Board of Medical Examiners of North Carolina—*K. P. B. Bonner, M. D.* 76
Minutes of the House of Delegates 87
President's Message—*J. V. McGougan, M. D.* 88
Annual Report of the Secretary-Treasurer of the Medical Society of North Carolina 88
Financial Statement from 1923-1924 ..... .90
Report of the Committee to Consider the Four-Year Medical School—*I. W. Faison, M. D.* 92

PAGE

Report of Committee on Automobile Insurance 95
Committee on Public Policy and Legislation 95
Report of Committee on Publication 95
Report of Delegates to American Medical Association 95
Nominating Committee 96
Report of Committee on Public Policy and Legislation—*K. P. B. Bonner, M. D.* 97
Report of Council 98
Report of Councillors—*H. D. Walker, M. D.* 99
Report of Nominating Committee 101
Officers, 1924-1925 101
Councillors 101
Report of Committee on Public Health Administration 102
Scientific Papers, List of 105
Section of North Carolina Medical Veterans and Medical Officers Reserve Corps, U. S. A.—*Chas. O'H. Laughinghouse* 107
High Rejection Rate for North Carolina Boys as Seen at Fort Bragg—*Gen. A. J. Bowley, Commander* 107
Our Relationship to Disabled Ex-Service Men of the State—*I. Thurman Mann, M. D.* 113
The Medical Reserve Corps from a National Viewpoint—*Major Glenn I. Jones, Surgeon* 117
Hospital Unit "O" and Base Hospital No. 6, A. E. F.—*Addison G. Brenizer, M. D.* 123
The Function of Base Hospitals in War—*C. S. Lawrence, M. D.* 128
Section on Surgery—*B. J. Lawrence, M. D.* 130
The Right Angle Position of the Upper Arm or Shoulder Joint Following Radical Amputation of the Breast 130
Inguinal Hernia—*D. T. Tayloe, Jr., M. D.* 133
Ureteral Obstruction—*J. D. Highsmith, M. D.* 139
The Symptoms and Pathology Produced by Slight Degrees of Renal Ptosis—*W. M. Coppridge, M. D.* 149
Surgery of Mesenteric Injuries with Reference to Intestinal Viability Based on Clinical and Experimental Evidence—*T. C. Bost, M. D.* 151
The Conservative Treatment of Intestinal Obstruction—*Albert W. James, A. B., M. D.* 156
The Thyroid—*W. Marvin Scruggs, B. S., M. D., F. A. C. S.* 161
Sacro-Iliac Disease—*Hugh A. Thompson, M. D.* 168
Report of an Unusual Case of Ectopic Pregnancy—*Moir S. Martin, M. D.; Edward C. Ashby, M. D.* 172
Some Recent Thoughts on the Pathology and Treatment of Cancer—*H. H. Bass, M. D.* 175
Horseshoe Kidney—Report of a Case—*H. M. Vann, M. D.; Chas. Phillips, M. D.* 186
Symposium of Congenital Pyloric Stenosis and Gastric and Duodenal Ulcer —*W. T. Rainley, M. D.* 191
The Symptoms and Diagnosis of Congenital Pyloric Stenosis—*Leroy J. Butler, M. D.* 191
The Medical and Dietetic Treatment of Congenital Hypertrophic Pyloric Stenosis—*J. Buren Sidbury, M. D.* 193

PAGE

Operative Treatment of Congenital Pyloric Stenosis—*R. L. Pittman, M. D.* 196
Gastric and Duodenal Ulcer from the Medical Viewpoint—*D. Heath Nisbet, M. D.* 204
Gastric and Duodenal Ulcers from a Surgical Viewpoint—*Addison G. Brenizer, M. D.* 208
Surgery of Gastric and Duodenal Ulcers—*Chas. S. Norburn, M. D.* 212
X-ray Diagnosis of Gastric and Duodenal Ulcer—*C. C. Phillips, M. D.; R. H. Lafferty, M. D.* 217
The Diagnosis and Post-Operative Treatment of Perforated Gastric and Duodenal Ulcer—*T. E. Wilkerson, B. S., M. D.* 220
Section on Chemistry, Materia Medica and Therapeutics—*W. T. Rainey, M. D.* 229
229
Some Salient Points in Digitalis Therapy—*W. T. Rainey, M. D.* 229
The Use of Mercury in the Treatment of Syphilis—*K. B. Geddie, M. D.* 232
Arsenical Poisoning from Neo-Arsphenamin, with Case Report—*J. F. Nash, M. D.* 235
The Etiology of Habit Disease—*W. C. Ashworth, M. D.* 237
The Shame of Modern Medicine 241
A Plea for a More General Study of the Fundamental Principles of these Sciences by the Members of the Medical Profession—*Frederick R. Taylor, B. S., M. D.* 241
Glucose Tolerance—*Wm. Allen, M. D.* 248
The Use and Abuse of Alcohol in Practice—*G. H. Macon, M. D.* 251
The Practical Application of Polyglandular Therapy in Women—*J. S. Brewer, M. D.* 252
The Treatment of Hypertension and Associated Conditions—*I. P. Battle, M. D.* 256
The Vegetative Nervous System in Relation to General Medicine—*A. A. Barron, M. D.* 260
The Sub-Lethal or Stimulating Dose of Radium—*Will D. James, M. D.* 266
Section on Pediatrics—*B. U. Brooks, M. D.* 269
Pediatric Possibilities in North Carolina—*B. U. Brooks, M. D.* 269
Use of Whole Lactic Acid Milk in Feeding Underweight Children Under One Year of Age—*Leroy J. Butler, M. D.* 273
Use of Serum from Convalescent Measles Patients—*Spencer P. Bass, M. D.* 276
Clothing from the Pediatric Standpoint—*Lewis W. Elias, M. D.* 280
Blood Transfusion in Malnutrition in Infancy; Report of Forty Cases—*Albert Smedes Root, M. D.* 284
Infections of the Urinary Tract (Pyelitis) in Infancy and Childhood—*Hamilton W. McKay, M. D.* 295
The Value of the Cystoscope in Treating Obstinate Cases—*H. W. McKay, M. D.* 295
Cerebro-Spinal Meningitis—*R. A. Herring, M. D.* 302
Section on Practice of Medicine—*D. Heath Nisbet, M. D.* 306
The Diagnosis of a Foreign Body in a Bronchus—*Edward W. Schoenheit, M. D.* 306
The Occurrence of Molds in the Sputum—*Mary E. Lapham, M. D.* 310
The Relation of History to Other Factors in Present-Day Diagnosis—*F. Dennette Adams, M. D.* 312
Adams-Stokes Syndrome—Epileptiform Convulsion Due to Heart Block—*J. P. Munroe, M. D.* 321
A Study on the Etiology of Pernicious Anemia—*Edward J. Wood, B. Sc., M. D., D. T. M. (Eng.)* 325
The Use of Insulin in Diabetes—*Claude A. Street, M. D.* 337
The Establishment of a Standard in Protein Sensitization—*Horace M. Baker, B. S., M. D.* 345
Diseases of the Colon—Diagnosis—*H. L. Brockmann, M. D.* 353
Attention, Medical Men!—*H. D. Stewart, M. D.* 361
Empyema of the Pericardium—*M. R. Adams, M. D.* 368
Section on Public Health and Education—*Robert S. McGeachy, M. D.* 370
Importance of History and Symptoms in Early Diagnosis of Tuberculosis—*J. L. Spruill, M. D.* 372
Health and Good Citizenship—*Rev. Lee McB. White* 375

PAGE

Rural Malaria Control—*L. L. Williams, Jr., Surgeon, U. S. P. H. S.* 378
The Present Status of the Experiment in Post-Graduate Medical Teaching in North Carolina—*I. H. Manning, M. D.* 383
Rabies in North Carolina and Its Prevention—*C. A. Shore, M. D.* 386
A Brief Study of the Records of the Recruiting Office at Fort Bragg, N. C. —*T. H. McAndrews, Lt. Col. M. C.* 392
Old Age—*J. W. McNeill, M. D.* 396
Section on Eye, Ear, Nose and Throat—*John W. MacConnell, M. D.* 400
Preparation, Treatment and After Treatment of Tonsils, Tonsillectomies, With Report of Five Selected from Two Hundred Cases—*L. L. Simmons, M. D.* 401
Surgical and Clinical Anatomy 401
Blood Supply 402
Observations Eye and Throat Conditions in Leprosy—*W. P. Hardee, M. D.* 408
Some Complications Following Operation for Acute Mastoiditis—*O. P. Schaub, M. D.* 413
Retrograde Dilatation of Esophageal Strictures—*J. G. Murphy, M. D.* 417
The Mosher-Toti Operation on the Lacrymal Sac—*Harry C. Willis, M. D.* 423
Acute Exudative Middle-Ear Catarrh—*Milton R. Gibson, M. D.* 427
Business Session 434
Section on Gynecology and Obstetrics—*F. Webb Griffith, M. D.* 435
Chairman's Address, Gynecological Tinkering—*F. Webb Griffith, A. M., M. D.* 435
Uterine Prolapse—*R. L. Gibbon, M. D.* 438
Uterine Radium Therapy—*Dougles P. Murphy, M. D.* 444
The Use of Radium and X-ray in Gynecology—*John D. MacRae, M. D.* 446
Conservatism in Ovarian Surgery with Report of One Hundred Cases—*Robert T. Ferguson, M. D., F. A. C. S.* 450
Trans-Sacral Anesthesia Associated with Caudal Block in Gynecology and Obstetrics—*Thomas M. Green, M. D.* 453
Disturbed Carbohydrate Metabolism of Pregnancy—*Brodie C. Nalle, M. A., M. D., F. A. C. S.* 456
Is There Such a Thing as Maternal Impression?—*Oren Moore, M. D.* 462
Woman's Auxiliary of the Medical Society of North Carolina 466
North Carolina State Section of the American College of Surgeons 468
Sir Walter Hotel 471
History of the Junior Candidate Group—*H. W. McKay, M. D.* 475
Address Before the Executive Committee of the Board of Regents, American College of Surgeons—*John Wesley Long, M. D.* 480
Of What Benefit are the Activities of the College to the Profession at Large —*J. T. Burrus, M. D., F. A. C. S.* 486
Program of the Sectional Meetings of the College—*W. F. Cole, M. D., F. A. C. S.* 487
The American College of Surgeons—An Educational Movement—*C. S. Woods, M. D.* 492
Alphabetical List of Members of Medical Society with Postoffice Address, 1924 499
Roster of Members for 1924 by Counties 516

EARLY HISTORY OF THE NORTH CAROLINA MEDICAL SOCIETY FROM ORGANIZATION TO 1804

Date	Place	President	Vice-President	Corresponding Secretary	Secretary	Recording Secretary	Treasurer	Censors
Dec. 24, 1799, or April 16, 1800	Raleigh	Richard Fenner	Nathaniel Loomis John Claiborne	Calvin Jones		Wm. B. Hill	Cargill Massenburg	Sterling Wheaton James Webb Jas. John Pasteur Jason Hand
Dec. 1, 1800	Raleigh	Richard Fenner			Sterlin Wheaton			
Dec. 1, 1801	Raleigh	John C. Osborne	Thomas Mitchel Richard Fenner	Calvin Jones	Sterlin Wheaton		Cargill Massenburg	James Webb John Sibley
1802	Raleigh	John C. Osborne		Calvin Jones				
1803	Raleigh	John C. Osborne		Calvin Jones				
1804	Raleigh	John C. Osborne		Calvin Jones				

HISTORY OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA FROM 1849 TO 1924
*Missing Data Not to Be Found in Records

	Date	Place of Meeting	Number in Attendance	Presidents	Vice-Presidents*	Secretary	Treasurer*	Members on roll*	Honorary Members*	Honorary Fellows*
	1849	Raleigh	25	F. J. Hill	.....	W. H. McKee	.....	25	....	....
1	1850	Raleigh	21	E. Strudwick	F. J. Haywood, C. E. Johnson, J. W. Williamson, W. G. Thomas.	W. H. McKee	W. G. Hill	38	9	....
2	1851	Raleigh	23	E. Strudwick	C. E. Johnson	W. H. McKee	W. G. Hill	46	9	....
3	1852	Wilmington	38	J. E. Williamson	Thomas N. Cameron, William G. Hill, Johnston B. Jones, N. J. Pittman.	E. B. Haywood	J. J. W. Tucker	72	12	....
4	1853	Fayetteville	24	J. E. Williamson	William G. Hill, Johnston B. Jones, J. B. G. Myers, N. J. Pittman.	W. W. Harris	Daniel Dupree	80	14	....
5	1854	Raleigh	37	J. H. Dickson	N. J. Pittman, J. B. G. Myers, J. Graham Tull, A. D. McLean.	S. S. Satchwell	Daniel Dupree	84	17	....
6	1855	Salisbury	23	J. H. Dickson	J. Graham Tull, Owen Hadley, A. D. McLean, Hugh Kelly.	S. S. Satchwell	J. B. Dunn	96	18	....
7	1856	Raleigh	35	C. E. Johnson	Marcellus Whitehead, E. R. Gibson, Johnston B. Jones, O. F. Manson.	S. S. Satchwell	J. B. Dunn	101	22	....
8	1857	Edenton	25	C. E. Johnson	Marcellus Whitehead, O. F. Manson, H. W. Faison, E. T. Gibson.	W. G. Thomas	J. B. Dunn	113	16	....
9	1858	New Bern	69	W. H. McKee	Edward Warren, C. W. Graham, Caleb Winslow, A. B. Pierce.	W. G. Thomas	J. B. Dunn	172	18	....
10	1859	Statesville	81	W. H. McKee	James G. Ramsey, P. E. Hines, J. R. Mercer, W. T. Howard.	W. G. Thomas	C. W. Graham	.....	....	....
11	1860	Washington	64	N. J. Pittman	P. T. Henry, R. H. Winborne, M. Whitehead, T. S. Leach.	W. G. Thomas	C. W. Graham	233	18	....
12	1861	Morganton	23	N. J. Pittman	J. J. Summerell, C. T. Murphy, G. W. Hodges, W. A. B. Norcom.	W. G. Thomas	C. W. Graham	244	18	....
13	1866	Raleigh	20	J. J. Summerell	.....	W. G. Thomas	C. W. Graham	.....	....	....
14	1867	Tarboro	41	W. G. Thomas	E. Burke Haywood, R. H. Winborne, W. L. Barrow, J. W. Jones.	S. S. Satchwell	C. W. Graham	288	11	....
15	1868	Warrenton	27	S. S. Satchwell	Hugh Kelly, George A. Foote, Charles J. O'Hagan, J. H. Baker.	Thomas F. Wood	J. W. Jones	.....	....	....
16	1869	Salisbury	36	E. B. Haywood	Thomas E. Wilson, A. B. Pierce, C. T. Murphy, M. A. Locke.	Thomas F. Wood	J. W. Jones	.....	....	....
17	1870	Wilmington	38	C. J. O'Hagan	E. A. Anderson, F. N. Lucky, W. R. Sharpe, R. L. Payne.	Thomas F. Wood	J. W. Jones	.....	....	....
18	1871	Raleigh	35	Hugh Kelly	D. N. Patterson, R. C. Pearson, J. B. Seaby, G. L. Kirby.	Thomas F. Wood	J. W. Jones	.....	....	....
19	1872	New Bern	34	W. G. Hill	H. W. Faison, R. I. Hicks, G. H. Macon, W. A. B. Norcom.	James McKee	J. W. Jones	.....	....	....

20	1873	Statesville	43	M. Whitehead	W. T. Ennett, William Little, Charles Duffy, T. P. Jerman.	James McKee	H. T. Bahnson	....	....	....
21	1874	Charlotte	56	W. A. B. Norcom	J. B. Jones, R. F. Lewis, C. G. Cox, J. L. Knight.	James McKee	H. T. Bahnson	....	....	....
22	1875	Wilson	60	J. W. Jones	Walter Debnam, J. A. Gibson, William Little, D. N. Patterson.	James McKee	H. T. Bahnson	148	5	....
23	1876	Fayetteville	33	Peter E. Hines	J. H. Baker, G. G. Smith, T. D. Haigh, J. K. Hall.	James McKee	H. T. Bahnson	157	4	....
24	1877	Salem	42	George A. Foote	J. K. Hall, B. W. Robinson, A. Holmes, A. A. Hill.	James McKee	A. G. Carr	177	4	....
25	1878	Goldsboro	79	R. L. Payne	E. M. Rountree, Richard Anderson, S. B. Flowers, L. A. Smith.	L. J. Picot	A. G. Carr	194	6	....
26	1879	Greensboro	109	Chas. Duffy, Jr.	J. A. Gibson, Willis Alston, James McKee, A. A. Hill.	L. J. Picot	A. G. Carr	198	6	....
27	1880	Wilmington	105	J. F. Shaffner	J. K. Hall, W. C. McDuffie, W. R. Wilson, R. F. Lewis.	L. J. Picot	A. G. Carr	225	6	....
28	1881	Asheville	92	R. B. Haywood	J. E. McRee, W. H. Lilly, R. H. Speight, W. J. H. Bellamy.	L. J. Picot	A. G. Carr	254	6	....
29	1882	Concord	65	Thos. F. Wood	T. J. Moore, D. J. Cain, S. E. Evans, John McDonald.	L. J. Picot	A. G. Carr	297	7	....
30	1883	Tarboro	112	J. K. Hall	A. W. Knox, J. M. Hadley, E. S. Foster, John Whitehead.	L. J. Picot	A. G. Carr	310	7	....
31	1884	Raleigh	112	A. B. Pierce	F. W. Potter, G. W. Graham, R. Dillard, G. W. Long.	L. J. Picot	A. G. Carr	348	7	....
32	1885	Durham	173	W. C. McDuffie	James McKee, T. E. Anderson, W. H. Whitehead, A. G. Carr.	W. C. Murphy	R. L. Payne, Jr.	424	6	....
33	1886	New Bern	113	Joseph Graham	H. T. Bahnson, L. J. Picot, J. L. McMillan, W. W. Faison.	J. M. Baker	R. L. Payne, Jr.	438	7	....
34	1887	Charlotte	112	H. T. Bahnson	G. G. Smith, J. L. Nicholson, C. M. Van Poole, H. B. Ferguson.	J. M. Baker	R. L. Payne, Jr.	452	7	....
35	1888	Fayetteville	133	T. D. Haigh	W. T. Ennett, J. A. Dunn, T. E. Anderson.	J. M. Baker	C. M. Van Poole	306	6	....
36	1889	Elizabeth C	50	W. T. Ennett	W. J. Jones, S. W. Stevenson, G. W. Long.	J. M. Baker	C. M. Van Poole	410	6	....
37	1890	Oxford	160	G. G. Thomas	R. L. Payne, Jr., Richard Dillard, S. D. Booth.	J. M. Hays	C. M. Van Poole	414	6	....
38	1891	Asheville	135	R. H. Lewis	S. W. Battle, J. L. Nicholson, W. H. Lilly.	J. M. Hays	C. M. Van Poole	422	6	....
39	1892	Wilmington	162	W. T. Cheatham	T. S. Burbank, J. W. Long, W. H. H. Cobb, W. D. Hilliard.	J. M. Hays	C. M. Van Poole	431	6	....
40	1893	Raleigh	221	J. W. McNeill	W. C. Galloway, H. H. Harris, J. M. Hadley, Thomas Hill.	R. D. Jewett	M. P. Perry	447	5	3

HISTORY OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA FROM 1849 TO 1924—Continued

*Missing Data Not to Be Found in Records

Date		Place of Meeting	Number in Attendance*	President	Vice-Presidents	Secretary	Treasurer	Members on Roll*	Honorary Members*	Honorary Fellows*
41	1894	Greensboro	166	W. H. H. Cobb	J. A. Hodge, R. W. Tate, Willis Alston, M. H. Fletcher.	R. D. Jewett	M. P. Perry	454	5	3
42	1895	Goldsboro	.....	J. H. Tucker	J. Howell Way, W. H. Harrell, O. McMullan, C. A. Misenheimer.	R. D. Jewett	M. P. Perry	436	7	3
43	1896	Winston-Salem	158	R. L. Payne	S. D. Booth, J. P. Munroe, J. A. Burroughs, J. E. Grimsley.	R. D. Jewett	M. P. Perry	452	7	3
44	1897	Morehead City	103	P. L. Murphy	J. C. Walton, A. A. Kent, M. R. Adams, B. L. Long.	R. D. Jewett	M. P. Perry	406	6	3
45	1898	Charlotte	.....	Francis Duffy	E. C. Register, A. T. Cotton, J. B. H. Knight, F. H. Russell.	R. D. Jewett	M. P. Perry	437	6	21
46	1899	Asheville	152	L. J. Picot	I. W. Faison, J. W. White, H. H. Dodson, W. C. Brownson.	Geo. W. Pressley	G. T. Sikes	489	6	16
47	1900	Tarboro	115	George W. Long	C. M. Van Poole, James M. Parrott, T. B. Williams, W. D. Hilliard.	Geo. W. Pressley	G. T. Sikes	482	6	21
48	1901	Durham	186	Julian M. Baker	M. H. Fletcher, C. A. Julian, D. A. Stanton, E. M. Summerell.	Geo. W. Pressley	G. T. Sikes	515	5	18
49	1902	Wilmington	147	Robert S. Young	A. G. Carr, E. D. Dixon-Carroll, I. M. Taylor, J. M. Parrott.	Geo. W. Pressley	G. T. Sikes	546	5	20
50	1903	Hot Springs	155	A. W. Knox	E. G. Moore, C. A. Julian, W. W. McKenzie, J. L. Nicholson.	J. Howell Way	G. T. Sikes	530	6	19
51	1904	Raleigh	326	H. B. Weaver	John Hey Williams, John C. Rodman, S. F. Pfohl.	J. Howell Way	G. T. Sikes	1,033	8	17
52	1905	Greensboro	361	David T. Tayloe	C. A. Julian, John T. Burrus, I. W. Faison.	J. Howell Way	G. T. Sikes	1,175	8	17
53	1906	Charlotte	406	Ed. C. Register	L. B. McBrayer, W. H. Cobb, Jr., W. O. Spencer.	J. Howell Way	G. T. Sikes	1,234	8	16
54	1907	Morehead City	217	Samuel D. Booth	C. M. Strong, J. E. McLoughlin, W. F. Hargrave.	David A. Stanton	H. McK. Tucker	888	7	16
55	1908	Winston-Salem	372	J. Howell Way	J. E. Stokes, J. A. Turner, W. H. Dixon.	David A. Stanton	H. McK. Tucker	998	7	28
56	1909	Asheville	337	J. F. Highsmith	C. M. Van Poole, D. A. Garrison, D. O. Dees.	David A. Stanton	H. McK. Tucker	1,067	7	25
57	1910	Wrightsville	276	E. J. Wood *J. A. Burroughs	John Q. Myers, L. D. Wharton.	David A. Stanton	H. D. Walker	1,080	8	35
58	1911	Charlotte	412	C. M. Van Poole	J. V. McGougan, W. E. Warren, L. N. Glenn.	David A. Stanton	H. D. Walker	880	8	45
59	1912	Hendersonville	296	A. A. Kent	J. P. Munroe, W. P. Horton. J. G. Murphy.	David A. Stanton	H. D. Walker	950	8	44
60	1913	Morehead City	232	J. P. Munroe	F. R. Harris, E. S. Bulluck, L. B. Morse.	John A. Ferrell	H. D. Walker	1,133	8	40
61	1914	Raleigh	431	J. M. Parrott	E. T. Dickinson, J. T. J. Battle, D. E. Sevier.	John A. Ferrell	H. D. Walker	1,228	8	47
62	1915	Greensboro	443	L. B. McBrayer	J. J. Phillips, C. W. Moseley, S. M. Crowell.	John A. Ferrell	H. D. Walker	1,221	9	68

*Died during his term of office; succeeded by E. J. Wood, first vice-president.

63	1916	Durham	406	M. H. Fletcher	J. L. Nicholson, L. N. Glenn, W. H. Hardison.	Benj. K. Hays	W. M. Jones	1,228	10	79
64	1917	Asheville	280	Charles O'H. Laughinghouse	D. J. Hill, J. L. Spruill. J. H. Shuford.	Benj. K. Hays	W. M. Jones	1,271	11	81
65	1918	Pinehurst	291	I. W. Faison	Wm. deB. MacNider, Jos. B. Greene, Ben F. Royal.	Benj. K. Hays Secy-Treas.	W. M. Jones Acting Sec.	1,087	11	81
66	1919	Pinehurst	335	Cyrus Thompson	J. W. Halford, T. W. Davis, A. McN. Blair.	Benj. K. Hays	L. B. McBrayer	1,306	11	100
67	1920	Charlotte	479	C. V. Reynolds	H. D. Walker, F. Stanley Whitaker, Thos. I. Fox.	Benj. K. Hays	L. B. McBrayer	1,497	12	100
68	1921	Pinehurst	404	T. E. Anderson	C. S. Lawrence, W. H. Ward, J. M. Manning.	Benj. K. Hays	L. B. McBrayer	1,491	12	93
69	1922	Winston-Salem	507	H. A. Royster	W. T. Parrot, B. C. Nalle, J. R. McCracken.	Secretary-Treasurer L. B. McBrayer		1,571	12	100
70	1923	Asheville	356	J. W. Long	F. M. Hanes, T. C. Johnson, B. L. Long.	L. B. McBrayer		1,592	9	101
71	1924	Raleigh	525	J. V. McGougan	J. L. Spruill, ‡Eugene B. Glenn, D. A. Garrison.	L. B. McBrayer		1,604	9	106

‡Died during his term of office.

PAST MEMBERS OF MEDICAL EXAMINERS OF THE STATE OF NORTH CAROLINA

Charles H. Dickson, President, Wilmington.....1859-1866
Charles E. Johnson, Raleigh.....1859-1866
Caleb Winslow, Hertford.....1859-1866
Otis F. Manson, Townsville.....1859-1866
William H. McKee, Raleigh.....1859-1866
Christopher Happoldt, Morganton.....1859-1866
J. Graham Tull, New Bern.....1859-1866
Samuel T. Iredell, Secretary.....1859-1866

N. J. Pittman, President, Tarboro.....1866-1872
E. Burke Haywood, Raleigh.....1866-1872
R. H. Winborne, Edenton.....1866-1872
S. S. Satchwell, Rocky Point.....1866-1872
J. J. Summerell, Salisbury.....1866-1872
R. B. Haywood, Raleigh.....1866-1872
M. Whitehead, Salisbury.....1866-1872
J. E. Shaffner, Salem.....1866-1872
William Little, Secretary.....1866-1872

Charles J. O'Hagan, President, Greenville.....1872-1878
W. A. B. Norcom, Edenton.....1872-1878
C. Tate, Murphy.....1872-1878
George A. Foote, Warrenton.....1872-1878
J. W. Jones, Tarboro.....1872-1878
R. L. Payne, Lexington.....1872-1878
Charles Duffy, Jr., Secretary, New Bern.....1872-1878

P. E. Hines, President, Raleigh.....1878-1884
T. D. Haigh, Fayetteville.....1878-1884
George L. Kirby, Goldsboro.....1878-1884
Thomas F. Wood, Wilmington.....1878-1884
Joseph Graham, Charlotte.....1878-1884
H. B. Bahnson, Secretary, Salem.....1878-1884
R. H. Lewis, Raleigh.....1880-1884

William R. Wood, President, Scotland Neck.....1884-1890
A. W. Knox, Raleigh.....1884-1890
Francis Duffy, New Bern.....1884-1890
P. L. Murphy, Morganton.....1884-1890
Willis Alston, Littleton.....1884-1890
W. H. J. Bellamy, Secretary, Wilmington.....1884-1890
J. A. Reagan, Weaverville.....1884-1890

R. L. Payne, Norfolk, Va.....1890-1892
George W. Purefoy, Asheville.....1890-1892
George G. Thomas, Wilmington.....1890-1894

Robert S. Young, Concord.....1890-1894
George W. Long, Graham.....1890-1894

W. H. Whitehead, President, Rocky Mount.....1890-1896
L. J. Picot, Secretary, Littleton.....1890-1896

Julian M. Baker, President, Tarboro.....1892-1898
H. B. Weaver, Asheville.....1892-1898
T. S. Burbank, Wilmington.....1894-1898
J. M. Hayes, Greensboro.....1894-1897
D. T. Tayloe, President, Wilmington.....1896-1902
R. H. Whitehead, Chapel Hill.....1896-1897
Thomas E. Anderson, Secretary, Statesville.....1896-1900
Kemp P. Battle, Jr., Raleigh.....1897-1902
J. Howell Way, Secretary, Waynesville.....1897-1902
W. H. H. Cobb, Goldsboro.....1898-1902
Albert Anderson, Raleigh.....1898-1902

E. C. Register, President, Charlotte.....1898-1902
Thomas S. McMullan, Hertford.....1900-1902
John C. Walton, Richmond, Va.....1900-1902
George W. Pressley, Secretary, Charlotte.....1902-1906

A. A. Kent, President, Lenoir.....1902-1908
G. T. Sikes, Secretary, Grissom.....1906-1908
Charles O'Hagan Laughinghouse, President, Greenville....1902-1908
M. H. Fletcher, President, Asheville.....1902-1908
James M. Parrott, Kinston.....1902-1908
J. T. J. Battle, Greensboro.....1902-1908
Frank H. Russell, Wilmington.....1902-1908

John Bynum, Winston-Salem.....1908-1914
John C. Rodman, Washington.....1908-1914
Benjamin K. Hays, Secretary, Oxford.....1908-1914
L. B. McBrayer, Asheville.....1908-1914
William W. McKenzie, Salisbury.....1908-1914
Henry H. Dodson, Greensboro.....1908-1914
J. L. Nicholson, Richlands.....1908-1914

J. Q. Myers, President, Charlotte.....1914-1920
J. F. Highsmith, Fayetteville.....1914-1920
H. A. Royster, Secretary, Raleigh.....1914-1920
E. G. Moore, Elm City.....1914-1920
J. G. Blount, Washington.....1914-1920
M. L. Stevens, Asheville.....1914-1920
*Charles T. Harper, Wilmington.....1914-1915

BOARD OF MEDICAL EXAMINERS, 1920-1926

L. N. Glenn, President, Gastonia; Surgery.
J. G. Murphy, Wilmington; Pharmacology, Materia Medica and Therapeutics.
L. A. Crowell, Lincolnton; Anatomy and Embryology.
K. P. B. Bonner, Secretary, Morehead City; Obstetrics, Gynecology, and Pediatrics.
W. P. Holt, Duke; Practice of Medicine.
W. M. Jones, Greensboro; Chemistry, Physiology and Hygiene.
C. A. Shore, Raleigh; Pathology, Bacteriology, Histology.

*Deceased 1915

ROSTER OF MEMBERS NORTH CAROLINA STATE BOARD OF HEALTH
FROM ORGANIZATION IN 1877 TO 1924

Name	Address	Appointed by	Term
S. S. Satchwell, M.D., President	Rocky Point	State Society	1877 to 1878
Thomas F. Wood, M.D., Secretary	Wilmington	State Society	1877 to 1878
Joseph Graham, M.D.	Charlotte	State Society	1877 to 1878
Charles Duffy, Jr., M.D.	New Bern	State Society	1877 to 1878
Peter E. Hines, M.D.	Raleigh	State Society	1877 to 1878
George A. Foote, M.D.	Warrenton	State Society	1877 to 1878
S. S. Satchwell, M.D., President	Rocky Point	State Society	1878 to 1884
Thomas F. Wood, M.D., Secretary	Wilmington	State Society	1878 to 1884
Charles J. O'Hagan, M.D., President	Greenville	State Society	1878 to 1882
George A. Foote, M.D.	Warrenton	State Society	1878 to 1882
Marcellus Whitehead, M.D.	Salisbury	State Society	1878 to 1880
R. L. Payne, M.D.	Lexington	State Society	1878 to 1880
H. G. Woodfin, M.D.	Franklin	Gov. Z. B. Vance	1878 to 1880
A. R. Ledeux, Chemist	Chapel Hill	Gov. Z. B. Vance	1878 to 1880
William Cain, Civil Engineer	Charlotte	Gov. Z. B. Vance	1878 to 1880
R. L. Payne, M.D.	Lexington	State Society	1881 to 1887
M. Whitehead, M.D., President	Salisbury	State Society	1881 to 1884
J. M. Lyle, M.D.	Franklin	Gov. T. J. Jarvis	1881 to 1883
William Cain, Civil Engineer	Charlotte	Gov. T. J. Jarvis	1881 to 1883
W. G. Simmons, Chemist	Wake Forest	Gov. T. J. Jarvis	1881 to 1883
J. W. Jones, M.D., President	Wake Forest	State Society	1883 to 1889
John McDonald	Washington	State Society	1883 to 1889
S. H. Lyle, M.D.	Franklin	Gov. T. J. Jarvis	1883 to 1885
W. G. Simmons, Chemist	Wake Forest	Gov. T. J. Jarvis	1883 to 1885
Arthur Winslow, Civil Engineer	Raleigh	Gov. T. J. Jarvis	1883 to 1886
R. H. Lewis, M.D.	Raleigh	State Board of Health	1884 to 1893
Thomas F. Wood, Secretary	Wilmington	State Society	1885 to 1887
William D. Hilliard, M.D.	Asheville	State Society	1885 to 1891
Arthur Winslow, Civil Engineer	Raleigh	Gov. A. M. Scales	1885 to 1891
W. G. Simmons, Chemist	Wake Forest	Gov. A. M. Scales	1885 to 1887
J. H. Tucker, M.D.	Henderson	Gov. A. M. Scales	1885 to 1887
R. H. Lewis, M.D., Secretary	Raleigh	State Society	1887 to 1893
H. T. Bahnson, M.D., President	Winston-Salem	State Society	1887 to 1888
Arthur Winslow, Civil Engineer	Raleigh	Gov. A. M. Scales	1887 to 1889
W. G. Simmons, Chemist	Wake Forest	Gov. A. M. Scales	1887 to 1889
J. H. Tucker, M.D.	Henderson	Gov. A. M. Scales	1888 to 1891
J. L. Ludlow, Civil Engineer	Winston	Gov. A. M. Scales	1888 to 1891
J. H. Tucker, M.D.	Henderson	Gov. D. G. Fowle	1888 to 1891
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. D. G. Fowle	1888 to 1891
J. L. Ludlow, Civil Engineer	Winston	Gov. D. G. Fowle	1889 to 1893
J. A. Hodges, M.D.	Fayetteville	State Society	1889 to 1892
J. M. Baker, M.D.	Tarboro	State Society	1889 to 1893
J. H. Tucker, M.D.	Henderson	Gov. T. M. Holt	1891 to 1893
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. T. M. Holt	1891 to 1893
J. L. Ludlow, Civil Engineer	Winston	Gov. T. M. Holt	1891 to 1892
Thomas F. Wood, M.D., Secretary*	Wilmington	State Society	1891 to 1897
George G. Thomas, M.D., President	Wilmington	State Board of Health	1892 to 1897
S. Westray Battle, M.D.	Asheville	State Society	1891 to 1895
W. H. Harrell, M.D.	Williamston	State Society	1892 to 1895
John Whitehead, M.D.	Salisbury	State Board of Health	1893 to 1895
W. H. G. Lucas	White Hall	Gov. Elias Carr	1893 to 1895
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. Elias Carr	1893 to 1895
John C. Chase, Civil Engineer	Wilmington	Gov. Elias Carr	1893 to 1895
R. H. Lewis, Secretary	Raleigh	Gov. Elias Carr	1893 to 1895
W. P. Beall, M.D.	Greensboro	Gov. Elias Carr	1894 to 1897
W. J. Lumsden, M.D.	Elizabeth City	Gov. Elias Carr	1895 to 1897
John Whitehead, M.D.	Salisbury	State Society	1895 to 1897
W. H. Harrell, M.D.	Williamston	State Society	1895 to 1897
W. P. Beall, M.D.	Greensboro	Gov. Elias Carr	1895 to 1897
R. H. Lewis, M.D., Secretary	Raleigh	Gov. Elias Carr	1895 to 1897
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. Elias Carr	1895 to 1897
John C. Chase, Civil Engineer	Wilmington	Gov. Elias Carr	1897 to 1899
Charles J. O'Hagan, M.D.	Raleigh	Gov. D. L. Russell	1897 to 1899
John D. Spicer, M.D.	Goldsboro	Gov. D. L. Russell	1897 to 1899
J. L. Nicholson, M.D.	Richlands	Gov. D. L. Russell	1897 to 1899
R. H. Lewis, M.D., Secretary	Raleigh	Gov. D. L. Russell	1897 to 1899
A. W. Shaffer, Civil Engineer	Raleigh	Gov. D. L. Russell	1899 to 1901
Charles O'Hagan, M.D.	Greenville	Gov. D. L. Russell	1899 to 1901
J. L. Nicholson, M.D.	Richlands	Gov. D. L. Russell	1899 to 1901
Albert Anderson, M.D.	Wilson	Gov. D. L. Russell	1899 to 1901
R. H. Lewis, M.D., Secretary	Raleigh	Gov. D. L. Russell	1899 to 1901
A. W. Shaffer, Civil Engineer	Raleigh	Gov. D. L. Russell	1899 to 1901
George G. Thomas, M.D., President	Wilmington	State Society	1899 to 1901
S. Westray Battle, M.D.	Asheville	State Society	1899 to 1901

*Died in 1892, leaving a five-year unexpired term, which was filled by the Board.

ROSTER OF MEMBERS—Continued

Name	Address	Appointed by	Term
H. W. Lewis, M.D.	Jackson	State Society	1899 to 1901
H. H. Dodson, M.D.	Milton	State Society	1899 to 1901
R. H. Lewis, M.D., Secretary	Raleigh	Gov. C. B. Aycocok	1901 to 1907
W. P. Ivey, M.D.	Lenoir	Gov. C. B. Aycocok	1901 to 1907
George G. Thomas, M.D., President	Wilmington	Gov. C. B. Aycocok	1901 to 1905
Francis Duffy, M.D.	New Bern	Gov. C. B. Aycocok	1901 to 1905
J. L. Ludlow, Civil Engineer	Winston	Gov. C. B. Aycocok	1901 to 1905
S. Westray Battle, M.D.	Asheville	State Society	1901 to 1907
H. W. Lewis, M.D.	Jackson	State Society	1901 to 1907
W. H. Whitehead, M.D.	Rocky Mount	State Society	1901 to 1905
J. L. Nicholson, M.D.	Richlands	State Society	1901 to 1905
J. L. Ludlow, Civil Engineer	Winston	Gov. C. B. Aycocok	1903 to 1909
J. Howell Way, M.D.	Waynesville	Gov. R. B. Glenn	1905 to 1911
W. O. Spencer, M.D.	Winston	Gov. R. B. Glenn	1905 to 1911
George E. Thomas, M.D., President	Wilmington	State Society	1905 to 1911
Thomas E. Anderson, M.D.	Statesville	State Society	1905 to 1911
R. H. Lewis, M.D.	Raleigh	Gov. R. B. Glenn	1907 to 1913
E. C. Register, M.D.	Charlotte	Gov. R. B. Glenn	1907 to 1913
David T. Tayloe, M.D.	Washington	State Society	1907 to 1909
James A. Burroughs, M.D.*	Asheville	State Society	1907 to 1913
J. E. Ashcraft, M.D.	Monroe	State Board of Health	1909 to 1913
J. L. Ludlow, Civil Engineer	Winston-Salem	Gov. W. W. Kitchin	1909 to 1913
J. Howell Way, M.D., President	Waynesville	Gov. W. W. Kitchin	1911 to 1917
W. O. Spencer, M.D.	Winston-Salem	Gov. W. W. Kitchin	1911 to 1917
Thomas E. Anderson, M.D.	Statesville	State Society	1911 to 1917
Charles O'H. Laughinghouse, M.D.	Greenville	State Society	1911 to 1917
R. H. Lewis, M.D.	Raleigh	Gov. Locke Craig	1913 to 1919
Edw. J. Wood, M.D.	Wilmington	Gov. Locke Craig	1913 to 1919
A. A. Kent, M.D.	Lenoir	State Society	1913 to 1915
Cyrus Thompson, M.D.	Jacksonville	State Society	1913 to 1919
Fletcher R. Harris, M.D.	Henderson	State Board of Health	1913 to 1919
J. L. Ludlow, Civil Engineer	Winston-Salem	Gov. Locke Craig	1915 to 1921
J. Howell Way, M.D., President	Waynesville	Gov. T. W. Bickett	1917 to 1923
E. C. Register, M.D.*	Charlotte	Gov. T. W. Bickett	1917 to 1923
Thomas E. Anderson, M.D.	Statesville	State Society	1917 to 1923
Charles O'H. Laughinghouse, M.D.	Greenville	State Society	1917 to 1923
Fletcher R. Harris, M.D.†	Henderson	State Society	1919 to 1923
A. J. Crowell, M.D.	Charlotte	Gov. T. W. Bickett	1919 to 1923
Chas. E. Waddell, C.E.‡	Asheville	Gov.CameronMorrison	1921 to 1923
Cyrus Thompson, M.D.	Jacksonville	State Society	1919 to 1925
R. H. Lewis, M.D.	Raleigh	Gov. T. W. Bickett	1919 to 1925
E. J. Tucker, D.D.S.	Roxboro	Gov. T. W. Bickett	1919 to 1925
Chas. E. Waddell, C.E.	Asheville	Gov.CameronMorrison	1921 to 1923
J. Howell Way, M.D.	Waynesville	Gov.CameronMorrison	1923 to 1929
A. J. Crowell, M.D.	Charlotte	Gov.CameronMorrison	1923 to 1929
James P. Stowe	Charlotte	Gov.CameronMorrison	1923 to 1927
D. A. Stanton, M.D.	High Point	State Board of Health	1923 to 1925
Thomas E. Anderson, M.D.	Statesville	State Society	1923 to 1929
Charles O'H. Laughinghouse	Greenville	State Society	1923 to 1929

¶Resigned to become member of General Assembly.
*Died leaving unexpired term.
†Resigned to become Health Officer Vance County.

‡Resigned.

STATE BOARD OF EXAMINERS FOR NURSES

Mrs. Dorothy Hayden, Conyers, Secretary ..... Greensboro
Miss E. A. Kelly ..... Fayetteville
Miss Mary P. Laxton ..... Biltmore
Dr. Oren Moore ..... Charlotte
Dr. J. M. Parrott ..... Kinston

STATUS OF SOCIETY MEMBERSHIP BY COUNTIES FOR YEARS 1910-1924

County	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924
Alamance	14	12	11	11	13	9	10	12	10	15	27	27	31	27	27
Alexander *a*	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Alleghany	....	....	....	....	....	2	2	....	....	....	....	....	....	1	....
Anson	1	1	6	8	7	....	....	....	1	3	2	1	2	12	12
Ashe	1	....	....	....	....	....	....	11	15	8	7	5	9	8	6
Avery	....	....	....	....	8	7	9	9	7	6	4	5	4	5	5
Beaufort	11	16	15	14	14	14	14	10	11	10	14	12	14	17	14
Bertie	5	2	2	2	3	3	3	3	5	5	10	9	12	10	9
Bladen	3	4	4	5	7	7	6	9	8	9	8	7	7	4	3
Brunswick	2	2	2	5	4	5	....	....	2	2	2	1	1	1	1
Buncombe	58	63	64	69	68	70	71	74	76	81	83	92	96	99	105
Burke	13	12	11	13	15	17	17	16	17	6	11	12	11	15	13
Cabarrus	18	21	21	19	22	23	25	20	22	19	20	19	21	23	19
Caldwell	13	12	10	12	12	11	7	9	13	12	10	10	12	12	10
Camden *b*	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Carteret	7	6	7	6	7	7	9	7	4	7	9	9	8	12	10
Caswell	1	1	1	1	1	1	1	1	1	3	2	2	1	1	1
Catawba	12	....	....	....	....	15	13	18	....	5	18	16	22	20	19
Chatham	2	6	....	14	15	12	11	11	11	7	10	11	6	7	9
Cherokee	6	7	9	8	7	10	9	11	10	6	10	10	10	10	9
Chowan-Perquimans	....	7	5	8	9	7	4	3	....	6	8	7	6	7	8
Clay *c*	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Cleveland	13	14	15	15	16	13	13	16	16	17	19	16	19	18	18
Columbus	8	10	12	12	14	9	11	7	1	6	10	8	9	14	11
Craven	14	12	14	18	15	11	8	11	7	7	6	6	8	10	12
Cumberland	20	20	22	23	22	24	19	17	16	15	20	24	23	22	32
Currituck	6	4	4	4	6	7	6	6	1	5	5	5	5	4	4
Dare *d*	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Davidson	13	13	15	13	17	13	9	20	20	19	18	16	18	18	22
Davie	6	5	6	....	....	....	6	5	4	4	4	4	4	6	4
Duplin	10	9	8	9	7	4	7	10	9	9	10	12	11	12	12
Durham-Orange	26	28	31	32	38	40	41	44	35	33	45	40	43	43	47
Edgecombe	10	11	11	11	13	13	13	10	10	7	15	15	15	12	10
Forsyth	25	29	31	32	37	39	42	45	37	37	57	62	60	59	62
Franklin	11	11	11	10	10	12	11	10	11	11	12	10	12	12	12
Gaston	27	29	29	30	27	26	25	27	27	26	35	38	39	40	40
Gates	....	....	....	....	....	....	....	....	....	1	....	....	....	1	1
Graham	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Granville	12	8	13	12	14	11	16	16	14	14	15	14	14	12	13
Greene	6	6	5	5	5	5	6	5	2	5	6	7	7	5	6
Guilford	65	56	58	59	62	71	66	68	67	72	77	78	80	87	93
Halifax	6	2	2	11	11	7	15	8	1	7	28	24	24	18	21
Harnett	15	14	17	17	16	17	15	17	15	14	16	15	16	15	15
Haywood	13	10	11	13	15	11	11	11	9	9	11	10	12	13	13
Henderson-Polk	14	17	17	11	14	14	15	15	11	13	15	13	13	13	13
Hertford	6	2	....	8	10	4	1	5	10	10	10	10	10	10	10
Hoke	....	....	....	....	....	....	....	10	11	10	10	8	6	8	9
Hyde	6	6	6	7	7	....	....	....	1	2	1	1	2	1	2
Iredell-Alexander	17	12	9	9	14	16	9	20	11	11	21	18	20	19	20
Jackson	....	....	....	2	3	5	2	5	2	5	5	6	6	6	8
Johnston	15	19	18	18	19	21	19	22	16	24	22	23	26	25	25
Jones	....	....	....	....	....	....	....	....	....	....	....	....	1	2	1
Lee	....	....	....	7	8	7	8	8	6	8	8	8	10	10	11
Lenoir	12	6	8	9	12	14	15	16	15	17	22	19	20	17	20
Lincoln	10	10	11	12	13	14	11	9	11	15	16	14	13	14	16
Macon-Clay	....	....	....	4	4	5	5	4	6	6	6	7	7	7	7
Madison	....	....	10	7	8	11	9	10	....	11	11	12	8	11	11
Martin	13	13	12	13	14	14	15	17	12	11	16	14	12	13	10
McDowell	4	5	6	6	7	7	7	8	7	6	6	5	5	6	7
Mecklenburg	57	44	50	63	69	71	74	63	49	97	104	107	110	115	109
Mitchell	4	5	5	4	2	2	2	1	....	4	5	8	10	10	7
Montgomery	9	7	7	8	6	10	9	9	8	6	8	11	10	9	9
Moore	11	21	21	13	16	15	18	10	15	16	16	17	21	20	20
Nash	....	....	1	....	19	18	26	27	21	26	25	26	30	30	33
New Hanover	21	21	22	31	28	33	41	30	29	38	40	46	51	46	44
Northampton	11	9	1	12	12	11	10	14	11	13	10	11	11	10	10
Onslow	6	11	10	12	10	8	9	11	7	9	8	7	7	5	6
Orange *e*	1	1	1	8	....	....	....	....	....	....	....	6	....	....	....
Pamlico	4	4	4	5	5	5	5	5	4	4	5	6	5	5	4
Pasquotank-Camden-Dare	11	12	12	13	15	15	17	19	16	15	16	11	19	18	17
Pender	2	2	2	2	....	....	....	....	4	3	1	1	2	2	1
Perquimans *f*	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Person	9	10	11	11	8	11	13	12	....	12	10	11	10	10	10
Pitt	10	10	5	9	5	15	9	14	5	18	24	19	24	23	24
Polk *g*	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Randolph	10	8	9	7	12	14	11	13	11	12	13	15	14	14	13

STATUS OF MEMBERSHIP BY COUNTIES—(Continued)

County	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924
Richmond	12	1	10	....	10	13	13	14	11	13	12	14	13	14	16
Robeson	15	22	23	35	24	16	22	16	8	31	35	34	33	27	29
Rockingham	16	16	16	18	19	17	10	4	15	16	20	23	25	21	23
Rowan	24	26	24	23	26	22	25	23	22	24	28	31	32	32	36
Rutherford	23	24	18	19	20	19	21	14	17	18	20	12	18	22	21
Sampson	11	11	12	12	14	14	18	15	10	11	13	14	12	13	17
Scotland	11	9	9	11	12	12	12	13	10	9	10	12	12	12	12
Stanly	11	10	11	11	13	14	9	14	11	11	15	12	11	12	15
Stokes	9	10	11	7	12	13	12	10	5	5	10	6	12	9	10
Surry	15	13	14	19	21	19	18	23	24	27	28	25	25	24	26
Swain	....	....	....	....	....	....	....	6	7	2	3	1	4	3	1
Transylvania	....	5	5	6	7	6	7	5	....	1	1	1	5	6	4
Tyrrell *h*	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Union	14	15	16	17	16	16	12	13	15	14	16	17	17	18	18
Vance	12	11	11	11	10	11	13	10	4	5	11	11	10	10	12
Wake	53	56	54	41	53	57	62	70	56	81	68	73	76	85	73
Warren	....	4	5	5	5	8	7	7	6	3	8	8	7	7	6
Washington-Tyrrell	....	....	....	....	....	....	....	....	....	....	....	10	9	9	9
Watauga	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Wayne	....	....	16	19	13	7	17	19	18	27	28	24	33	32	29
Wilkes	11	11	6	9	8	7	6	9	8	10	10	11	10	10	10
Wilson	17	17	17	17	24	22	22	24	21	25	29	31	28	31	31
Yadkin	6	6	6	7	7	6	....	....	....	10	2	5	4	3	2
Yancey	....	....	....	....	....	....	....	....	....	3	3	1	1	1	1
Totals	997	996	1036	1133	1220	1221	1228	1271	1087	1306	1497	1491	1571	1592	1606

a See Iredell-Alexander; b See Pasquotank-Camden-Dare; c See Macon-Clay; d See Pas-quotank-Camden-Dare; e See Durham-Orange; f See Chowan-Perquimans; g See Henderson-Polk; h See Washington-Tyrrell.

HONORARY FELLOWS, MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

Adams, M. R. ..... Statesville
Alexander, Annie L. ..... Charlotte
*Alston, B. P. ..... Epsom
Ambler, C. P. ..... Asheville
Anderson, Albert ..... Raleigh
Anderson, Thos. Eli ..... Statesville
*Archey, L. M. ..... Concord
*Asbury, F. E. ..... Ashboro
*Attmore, Geo. S. ..... Stonewall
*Bahnson, H. T. ..... Winston-Salem
Baker, J. M. ..... Tarboro
*Barrier, P. A. ..... Mt. Pleasant
Battle, J. T. J. ..... Greensboro
*Battle, Kemp P. ..... Raleigh
Battle, S. W. ..... Charlotte
Beall, Wm. P. ..... Greensboro
*Bellamy, W. J. H. ..... Wilmington
Boddie, N. P. ..... Durham
*Bolton, Mahlon ..... Rich Square
*Booth, Samuel D. ..... Oxford
Brown, J. S. ..... Hendersonville
*Bulluck, D. Wm. ..... Wilmington
Bynum, John ..... Winston-Salem
*Caldwell, D. G. ..... Concord
*Cheatham, Archibald ..... Durham
*Clark, G. L. ..... Clarkton
Council, J. B. ..... Salisbury
*Covington, J. M. ..... Wadesboro
Cox, E. L. ..... Jacksonville
*Croom, J. D. ..... Maxton
Crowell, A. J. ..... Charlotte
Daligny, Charles ..... Troy
Dalton, David N. ..... Winston-Salem
DeArmon, J. McC. ..... Charlotte
*Denny, Wm. W. ..... Pink Hill
Dillard, Richard, Jr. ..... Edenton
Dodson, H. H. ..... Greensboro
*Duffy, Charles ..... New Bern
*Duffy, Francis ..... New Bern
Edgerton, Jas. L. ..... Hendersonville
Edwards, G. C. ..... Hookerton
Edwards, J. D. ..... Siler City
Ellis, R. C. ..... Shelby
Faison, I. W. ..... Charlotte
Faison, Wm. W. ..... Goldsboro
Fletcher, M. H. ..... Asheville
Flippin, J. M. ..... Winston-Salem
Fox, M. F. ..... Guilford College
Freeman, Richard A. ..... Burlington
Galloway, W. C. ..... Wilmington
Gibbon, Robert L. ..... Charlotte
Gilmer, Chas. S. ..... Greensboro, R. 6
Goley, Wm. R. ..... Graham
*Goodman, E. G. ..... Lanvale
Goodwin, A. W. ..... Raleigh
*Graham, Joseph ..... Charlotte
Graham, Wm. A. ..... Charlotte
Griffin, J. A. ..... Clayton
*Hall, Wright ..... Wilmington
*Hargrove, R. H. ..... Robersonville
Harris, F. R. ..... Henderson
*Harris, I. A. ..... Weaverville
*Haywood, F. J. ..... Raleigh
Haywood, Hubert ..... Raleigh
*Hicks, Wm. N. ..... Durham
Highsmith, J. F. ..... Fayetteville
*Hill, L. H. ..... Germanton
Houck, Albert F. ..... Lenoir
*Hudson, Wm. L. ..... Dunn
Hughes, Francis W. ..... New Bern
Hunter, L. W. ..... Charlotte
Ingram, Chas. B. ..... Mt. Gilead
Irwin, J. R. ..... Charlotte
Jewett, Robert D. ..... Wilmington
Johnson, N. M. ..... Durham
Jones, A. G. ..... Walnut Cove
Jones, C. M. ..... Grimesland
Jordan, T. M. ..... Raleigh
Julian, Charles A. ..... Thomasville
Knight, J. B. H. ..... Williamston
Knox, A. W. ..... Raleigh
Laughinghouse, Chas. O'H. ..... Greenville
Leggett, Kenelm ..... Hobgood
Lewis, H. W. ..... Jackson
Lewis, R. H. ..... Raleigh
Long, Benj. L. ..... Hamilton
*Long, Geo. W. ..... Graham
Long, H. F. ..... Statesville
Long, J. W. ..... Greensboro
*Love, W. J. ..... Wilmington
*McDonald, A. D. ..... Wilmington
McGee, J. W. ..... Raleigh
*McKay, A. M. ..... Summerville
*McKay, John A. ..... Buies Creek
*McKee, James ..... Raleigh
McKenzie, W. W. ..... Salisbury

McMillan, Benj. F. ..... Red Springs
*McMillan, J. D. ..... Edenton
*McMillan, J. L. ..... Red Springs
McMillan, W. D. ..... Wilmington
McNeill, J. Wm. ..... Fayetteville
*McNeill, Wm. M. ..... Buies Creek
Manning, J. M. ..... Durham
*Miller, J. F. ..... Goldsboro
Misenheimer, C. A. ..... Charlotte
*Misenheimer, Theo. F. ..... Morven
Monroe, W. A. ..... Sanford
Montgomery, John C. ..... Charlotte
Moore, C. E. ..... Wilson
Moore, Edwin G. ..... Elm City
Munroe, J. P. ..... Charlotte
Nelson, R. J. ..... Robersonville
*Nicholson, J. L. ..... Richland
Nicholson, P. A. ..... Washington
Nicholson, Sam T. ..... Washington
Noble, R. J. ..... Selma
Nobles, Jos. E. ..... Greenville
*Pate, Wm. T. ..... Gibson
Pemberton, Wm. D. ..... Concord
*Perry, M. P. ..... Macon
*Pharr, T. F. ..... Concord
Pharr, Wm. W. ..... Charlotte
Phillips, Matthew D. ..... Dalton
*Picot, L. J. ..... Littleton
*Prince, D. M. ..... Laurinburg
Purefoy, G. W. ..... Asheville
*Register, Edw. C. ..... Charlotte
*Ritter, F. W. ..... Moyock
Royster, W. I. ..... Raleigh
Schonwald, J. T. ..... Wilmington
*Shaffner, J. F., Sr. ..... Winston-Salem
Shamburger, J. B. ..... Star
Sikes, G. T. ..... Creedmoor
Smith, R. A. ..... Goldsboro
Snipes, E. P. ..... Jonesboro
*Speight, R. H., Sr. ..... Whitakers
Stamps, Thos. ..... Lumber Bridge
Stanton, D. A. ..... High Point
*Stevens, J. A. ..... Clinton
Stevens, M. L. ..... Asheville
Strickland, Edw. F. ..... Bethania
Summerell, E. M. ..... China Grove
Tayloe, D. T. ..... Washington
*Taylor, I. M. ..... Morganton
*Thomas, G. G. ..... Wilmington
Trantham, H. T. ..... Salisbury
Tull, Henry ..... Kinston
Van Poole, C. M. ..... Salisbury
Vestal, W. J. ..... Lexington
*Von Ruck, Karl ..... Asheville
Ward, W. H. ..... Plymouth
Way, J. Howell ..... Waynesville
Weaver, H. B. ..... Asheville
Wharton, L. D. ..... Smithfield
*Whitaker, R. A. ..... Kinston
White, J. W. ..... Wilkesboro
Whitehead, John ..... Salisbury
*Whitehead, W. H. ..... Rocky Mount
Whitfield, Wm. Cobb ..... Grifton
Whittington, W. P. ..... Asheville
*Williams, J. H. ..... Asheville
Wilson, A. R. ..... Greensboro
*Young, R. S. ..... Concord

*Deceased.

HONORARY MEMBERS, MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

*L. McL. Tiffany ..... Baltimore, Md.
W. W. Keen ..... Philadelphia, Pa.
J. Allison Hodges ..... Richmond, Va.
*R. L. Payne ..... Norfolk, Va.
*J. N. McCormack ..... Bowling Green, Ky.
R. L. Payne, Jr. ..... Norfolk, Va.
J. L. Ludlow, C. E. ..... Winston-Salem
Paul V. Anderson ..... Richmond, Va.
Stuart McGuire ..... Richmond, Va.
William J. Mayo ..... Rochester, Minn.
William Seaman Bainbridge ..... New York, N. Y.
William Sharpe ..... New York, N. Y.

*Deceased.

OFFICERS, 1923-1924

President.....Dr. J. Vance McGougan, Fayetteville
First Vice-President.....Dr. J. L. Spruill, Jamestown
Second Vice-President.....Dr. Eugene B. Glenn*, Asheville
Third Vice-President.....Dr. D. A. Garrison, Gastonia
Secretary-Treasurer.....Dr. L. B. McBrayer, Southern Pines

OFFICERS, 1924-1925

President.....Dr. Albert Anderson, Raleigh
First Vice-President.....Dr. W. L. Dunn, Asheville
Second Vice-President.....Dr. A. E. Bell, Mooresville
Third Vice-President.....Dr. K. G. Averitt, Cedar Creek
Secretary-Treasurer.....Dr. L. B. McBrayer, Southern Pines

COUNCILORS, 1924-1927

First District—Dr. H. D. Walker.....Elizabeth City
Second District—Dr. Grady G. Dixon.....Ayden
Third District—Dr. E. J. Wood.....Wilmington
Fourth District—Dr. J. C. Grady.....Kenly
Fifth District—Dr. W. A. Monroe.....Sanford
Sixth District—Dr. V. M. Hicks.....Raleigh
Seventh District—Dr. T. C. Bost.....Charlotte
Eighth District—Dr. F. R. Taylor‡.....High Point
Ninth District—Dr. M. R. Adams.....Statesville
Tenth District—Dr. W. J. Hunnicutt.....Asheville

---

*Died during his term of office.
‡Appointed to succeed Dr. W. T. Cole, resigned.

CHAIRMEN OF SECTIONS, 1925

Public Health and Education—
Dr. L. J. Smith, Wilson

Surgery—
Dr. H. H. Bass, Henderson

Eye, Ear, Nose and Throat—
Dr. H. L. Sloan, Charlotte
(*Secretary*—Dr. R. V. Brawley, Salisbury)

Gynecology and Obstetrics—
Dr. B. C. Nalle, Charlotte

Pediatrics—
Dr. Leroy J. Butler, Winston-Salem

Practice of Medicine—
Dr. Frederick R. Taylor, High Point

Chemistry, Materia Medica and Therapeutics—
Dr. Henry L. Cook, Fayetteville

N. C. Section of Medical Veterans and Medical Officers Reserve Corps, U. S. A.— Dr. W. L. Dunn, Asheville

DELEGATES

To American Medical Association	Dr. H. A. Royster, Raleigh, 1923-1924 Dr. M. L. Stevens, Asheville, 1924-1925 Alternate—Dr. J. Q. Myers, Charlotte
To Medical Society of Virginia	Dr. Floyd P. Wooten, Kinston Dr. E. S. Boice, Rocky Mount Dr. W. W. Green, Tarboro Dr. C. L. Sherrilll, Statesville Dr. L. G. Beall, Black Mountain
To South Carolina Medical Association	Dr. J. O. McClelland, Maxton Dr. Joseph E. Nobles, Greenville Dr. J. B. Sidbury, Wilmington Dr. J. T. Benbow, Winston-Salem

COMMITTEES

Public Policy and Legislation	Dr. W. A. Monroe, Chairman, Sanford Dr. A. A. Kent, Lenoir Dr. J. V. McGougan, Fayetteville*
Finance	Dr. A. C. Everett, Chairman, Rockingham Dr. W. C. Ashworth, Greensboro Dr. W. F. Hargrove, Kinston
Obituaries	Dr. A. W. Knox, Chairman, Raleigh Dr. C. F. Strosnider, Goldsboro Dr. F. L. Siler, Franklin
Scientific Work‡	Dr. Wm. deB. MacNider, Chairman, Chapel Hill Dr. C. A. Shore, Raleigh Dr. E. J. Wood, Wilmington
Memorial for the North Carolina Physicians Who Died in the Late War	Dr. J. P. Munroe, Chairman, Charlotte Dr. A. J. Crowell, Charlotte Dr. L. B. McBrayer, Southern Pines Dr. J. M. Parrott, Kinston Dr. J. T. Burrus, High Point
Public Health Administration§	Pres. State Board of Health, ex officio, Dr. J. Howell Way, Waynesville Pres. State Board of Medical Examiners, ex officio, Dr. L. N. Glenn, Gastonia Pres. North Carolina Hospital Asso., ex officio, Dr. C. M. Strong, Charlotte

*Appointed to succeed Dr. K. P. B. Bonner, resigned.

‡Appointed in 1922 to serve for five years.

Constitution and By-Laws	Dr. C. M. Van Poole, Chairman, Salisbury Dr. D. A. Garrison, Gastonia Dr. Paul A. Ringer, Asheville Dr. H. M. S. Cason, Edenton Dr. C. W. Banner, Secretary, Greensboro
Symposium (Eye, Ear, Nose and Throat)	Dr. H. L. Sloan, Chairman of Section (Chairman ex officio), Charlotte Dr. O. P. Schaub, Winston-Salem Dr. J. G. Murphy, Wilmington Dr. V. M. Hicks, Raleigh
Arrangements	Dr. W. C. Mudgett, Chairman, Southern Pines
Place and Date of Meeting, 1925	Pinehurst, April 28, 29, 30

§Permanent standing committee.

PROGRAM
GENERAL SESSIONS

TUESDAY, APRIL 15, 9:00 A. M.

OPENING EXERCISES

Call to Order:

Dr. Albert Anderson, Chairman of the Committee on Arrangements, Raleigh.

Invocation:

Rev. W. A. Stanbury, Pastor, Edenton Street Methodist Church, Raleigh.

Welcome from the Mayor:

Hon. E. E. Culbreth, Raleigh.

Welcome from Wake County Medical Society:

Dr. H. M. Bonner, President, Raleigh.

Welcome to the City of Raleigh:

Hon. R. N. Simms, Raleigh.

Response:

Dr. Seavy Highsmith, Fayetteville.

President's Address:

Dr. J. V. McGougan, Fayetteville.

Announcements:

Chairman of Committee on Arrangements. Secretary.

TUESDAY, APRIL 15, 2:00 P. M.

Meeting of the House of Delegates.

TUESDAY, APRIL 15, 8:00 P. M.
(City Auditorium)

SYMPOSIUM: MENTAL DEFECTIVES

Medical Aspect of Mental Defectives, Dr. J. K. Hall, Richmond, Va.

Legal Aspect of Mental Defectives—Hon. J. C. B. Ehringhouse, Elizabeth City.

Address—Dr. Royal S. Copeland, United States Senator, New York.

WEDNESDAY, APRIL 16, 12:00 M.

Conjoint Session of the Medical Society of the State of North Carolina and the North Carolina State Board of Health (Dr. J. Howell Way, President of the State Board of Health, presiding).

WEDNESDAY, APRIL 16, 2:00 P. M.

Meeting of the House of Delegates.

WEDNESDAY, APRIL 16, 8:00 P. M.

1. Report of the Board of Medical Examiners—Dr. K. P. B. Bonner, Secretary-Treasurer, Raleigh.

2. Report of the Committee on Obituaries—Dr. A. W. Knox, Chairman, Raleigh; Dr. C. F. Strosnider, Goldsboro; Dr. F. L. Siler, Franklin.

THURSDAY, APRIL 17, 11:00 A. M.

Report of House of Delegates.

Installation of Officers, 1924-25.

Resolutions.

Miscellaneous Business.

Adjournment.

SECTION MEETINGS

TUESDAY, APRIL 15, 10:30 A. M.

SECTION ON PRACTICE OF MEDICINE

Dr. D. Heath Nisbet, Chairman, Charlotte

1. Attention, Medical Men! Dr. H. D. Stewart, Monroe.

2. The Diagnosis of a Foreign Body in a Bronchus. Case Report. Dr. E. W. Schoenheit, Asheville.

3. The Occurrence of Moulds in the Respiratory Passages. Dr. Mary E. Lapham, Highlands.

4. The Value of a History. Dr. F. D. Adams, Washington, D. C.

5. Adams Stokes Syndrome-Epileptiform Convulsions due to Heart Block. Dr. J. P. Munroe, Charlotte.

6. The Nature of Sprue and Its Relation to Pernicious Anemia and Moniliasis. Dr. E. J. Wood, Wilmington.

7. Insulin Treatment in Diabetes. Dr. C. A. Street, Winston-Salem.

8. Sensitization to Foods. Dr. H. M. Baker, Lumberton.

9. Diseases of the Colon. Dr. H. L. Brockmann, High Point.

10. The Prevention of Mental Disorders. Dr. Tom A. Williams, Washington, D. C.

11. Empyema of the Pericardium, Dr. M. R. Adams, Statesville.

TUESDAY, APRIL 15, 10:30 A. M.

N. C. SECTION OF MEDICAL VETERANS AND MEDICAL OFFICERS RESERVE CORPS, U. S. A.

Dr. Chas. O'H. Laughinghouse, Chairman, Greenville

1. Our Relationship to the Disabled Ex-Service Men of the State. Dr. I. T. Mann, National Vice-Commander American Legion, High Point.

2. The Medical Reserve Corps: Some of Its Needs and How Best to Promote It—Dr. J. Howell Way, Waynesville.

3. The Medical Reserve Corps from a National Viewpoint. Major Glenn I. Jones, Surgeon General's Office, Washington, D. C.

4. Hospital Unit O and Base Hospital 6, A. E. F., Dr. Addison G. Brenizer, Charlotte.

5. The Function of Base Hospitals in War (Illustrated by lantern slides). Dr. C. S. Lawrence, Winston-Salem.

6. High Rejection Rate for North Carolina Boys as Seen at Fort Bragg. General A. J. Bowley, Commander, Fort Bragg.

TUESDAY, APRIL 15, 10:30 A. M.

SECTION ON CHEMISTRY, MATERIA MEDICA AND THERAPEUTICS

Dr. W. T. Rainey, Chairman, Fayetteville

1. Chairman's Address. Some Salient Points in Digitalis Therapy. Dr. W. T. Rainey, Fayetteville.

2. Digitalis. Dr. T. W. Carmichael, Rowland.

3. Etiology of Habit Disease. Dr. W. C. Ashworth, Greensboro.

4. Mercury in Treatment of Syphilis. Dr. K. B. Geddie, Raeford.

5. Arsenical Poison from Neoarsphenamine. Dr. J. F. Nash, St. Paul.

6. The Use and Abuse of Alcohol in Practice. Dr. G. H. Macon, Warrenton.

7. The Practical Application of Polyglandular Therapy in Women. Dr. J. S. Brewer, Roseboro.

8. Sub-Lethal or Stimulating Dose of Radium. Dr. W. D. James, Hamlet.

9. The Shame of Modern Medicine. Getting one's Post-graduate Education in Pharmacology and Therapeutics from the Propaganda of the Proprietary House; a Plea for the more General Study of the Fundamental Principles of these Sciences by the Members of the Medical Profession. Dr. Frederick R. Taylor, High Point.

10. The Necessity for Glucose Tolerance Determination in Individuals with Glycosuria. Dr. William Allan, Charlotte.

11. The Vegetative Nervous System in Relation to General Medicine. Dr. A. A. Barron, Charlotte.

12. Treatment of Hypertension and Associated Conditions. Dr. I. P. Battle, Rocky Mount.

13. Camphor in Pneumonia and Other Diseases. Dr. D. S. Currie, Parkton.

14. Some Observations on the Use of Drugs Over a Period of 25 Years. Dr. J. E. Kerr, Winston-Salem.

TUESDAY, APRIL 15, 2:00 P. M.

SECTION ON PUBLIC HEALTH AND EDUCATION

Dr. R. S. McGeachy, Chairman, Kinston

1. Chairman's Address. Dr. R. S. McGeachy, Health Officer, Kinston.

2. Address. Dr. Royal S. Copeland, United States Senator, New York. (This address will be delivered before the General Session on Tuesday evening in the City Auditorium.)

3. The Value of History Taking in Early Diagnosis of Tuberculosis. Dr. J. L. Spruill, Superintendent Guilford County Sanatorium, Jamestown.

Dr. J. H. Williams, Assistant Physician State Sanatorium, leader of discussion.

4. Health and Good Citizenship. Reverend Lee McBride White, Pastor First Baptist Church, Kinston.

Dr. W. L. Poteat, President Wake Forest College, leader of discussion.

5. Control of Malaria in Rural Districts. Dr. L. L. Williams, Surgeon U. S. P. H. Service, Washington, D. C.

Dr. H. A. Taylor, Deputy Health Officer in charge of Anti-Malarial Work in Eastern North Carolina, leader of discussion.

6. The Present Status of the Experiment in Post-graduate Medical Teaching in North Carolina. Dr. I. H. Manning, Dean Medical Department, University of North Carolina, Chapel Hill.

Dr. K. P. B. Bonner, Secretary State Board of Medical Examiners, leader of discussion.

7. Rabies in North Carolina and Its Prevention. Dr. C. A. Shore, Director State Laboratory of Hygiene, Raleigh. General discussion.

8. Heredity. Dr. W. A. Newbold, Medical Director Caswell Training School, Kinston.

Dr. Harry Crane, head of Psychological Department, University of North Carolina, leader of discussion.

9. Education and Public Health. Dr. E. C. Brooks, President State College, Raleigh. Dr. G. M. Cooper, Assistant Secretary State Board of Health, leader of discussion.

10. High Rejection Rate for North Carolina Boys as Seen at Fort Bragg. Colonel T. H. McAndrews, Ranking Medical Officer, Fort Bragg.

11. Old Age. Dr. J. W. McNeill, Fayetteville.

WEDNESDAY, APRIL 16, 9:00 A. M.

SECTION ON EYE, EAR, NOSE AND THROAT

Dr. John W. MacConnell, Chairman, Davidson

Dr. H. L. Sloan, Secretary, Charlotte

1. Chairman's Address. Dr. John W. MacConnell, Davidson.

2. Preparation, Treatment and After Treatment of Tonsils, Tonsillectomies, with Report of Five, selected from 200 Cases. Dr. L. L. Simmons, Greensboro.

3. Observations Eye and Throat Conditions in Leprosy. Dr. W. P. Hardee, Durham.

4. Some Complications Following Acute Mastoiditis. Dr. O. P. Schaub, Winston-Salem.

5. Retrograde Dilatation of Esophageal Strictures. Dr. J. G. Murphy, Wilmington.

6. The Mosher-Toti Operation on the Lacrymal Sac (Combined Intranasal and External Operation). Dr. H. C. Willis, Wilson.

7. Acute Exudative Catarrh of the Ear. Dr. M. R. Gibson, Raleigh.

8. The Salivary Glands in Relation to the Nose and Throat Specialist. Case Reports. Dr. A. C. McCall, Asheville.

WEDNESDAY, APRIL 16, 3:00 TO 5:00 P. M.

Rex Hospital

Eye Clinic. Dr. V. M. Hicks, Raleigh.

Ear, Nose and Throat Clinic. Drs. J. B. Wright and M. R. Gibson, Raleigh.

WEDNESDAY, APRIL 16, 9:00 A. M.

SECTION ON PEDIATRICS

Dr. B. U. Brooks, Chairman, Durham

1. Chairman's Address. Pediatric Possibilities in North Carolina. Dr. B. U. Brooks, Durham.

2. Lactic Acid Milk in Infant Feeding. Dr. LeRoy J. Butler, Winston-Salem.

3. Use of Serum from Convalescent Measles Patients. Report of Cases. Dr. Spencer P. Bass, Tarboro.

4. The Question of Clothes from the Pediatric Standpoint. Dr. L. W. Elias, Asheville.

5. Blood Transfusion in Malnutrition of Infants. Report of Forty Cases. Dr. A. S. Root, Raleigh.

6. Ureteral Catheterization in Children. Dr. Hamilton W. McKay, Charlotte.

7. Report of Cases of Cerebrospinal Meningitis. Death from Respiratory. Paralysis. Autopsy, Prolapse of Cerebellum. Presentation of Specimen. Dr. R. A. Herring, Greensboro.

WEDNESDAY, APRIL 16, 9:00 A. M.

SECTION ON SURGERY

Dr. B. J. Lawrence, Chairman, Raleigh

1. Chairman's Address. Right Angle Position of the Arm after Operation for Carcinoma of the Breast. Dr. B. J. Lawrence, Raleigh.

2. The Treatment of Inguinal Hernia. Dr. D. T. Tayloe, Jr., Washington.

3. Ureteral Obstruction, Based upon a Study of 150 cases. Drs. J. F. and J. D. Highsmith, Fayetteville.

4. The Pathology and Symptoms Produced by Slight Degrees of Renal Ptosis. Dr. W. M. Coppridge, Durham.

5. Surgery of Mesenteric Injuries with Reference to Intestinal Viability, Based on Clinical and Experimental Evidence (lantern slides). Dr. T. C. Bost, Charlotte.

6. The Conservative Treatment of Intestinal Obstruction. Dr. Albert W. James, Hamlet.

7. The Thyroid. Dr. Wm. Scruggs, Charlotte.

8. Sacro-iliac Disease. Dr. Hugh A. Thompson, Raleigh.

9. X-ray Pathology of Bone. Drs. W. F. Cole and H. H Dodson, Greensboro.

10. Intracranial Hemorrhage in the New Born and Its Treatment. Dr. Thomas M. Green, Wilmington.

11. Conservatism in Ovarian Surgery, with Report of 100 Cases. Dr. Robert T. Ferguson, Charlotte.

12. Report of an Unusual Case of Ectopic Pregnancy. Drs. Moir S. Martin and E. C. Ashby, Mount Airy.

13. Some Recent Thoughts on the Pathology and Treatment of Cancer. Dr. H. H. Bass, Henderson.

14. Horseshoe Kidney. Report of a Case. (Lantern Slides and Specimen.) Drs. H. M. Vann and Charles Phillips, Departments of Anatomy and Pathology, Wake Forest College.

WEDNESDAY, APRIL 16, 2:00 P. M.

SYMPOSIUM ON GASTRIC AND DUODENAL ULCER AND CONGENITAL PYLORIC STENOSIS

Combined Section on Practice of Medicine, Chemistry, Materia Medica and Therapeutics, and Surgery.

Chairman—Drs. D. Heath Nisbet, Charlotte; W. T. Rainey, Fayetteville; B. J. Lawrence, Raleigh

Dr. W. T. Rainey, Fayetteville, presiding

1. Symptomatology and Diagnosis of Congenital Pyloric Stenosis. Dr. LeRoy J. Butler, Winston-Salem.

2. Dietetic and Medical Treatment of Congenital Pyloric Stenosis. Dr. J. B. Sidbury, Wilmington.

3. Operative Treatment of Congenital Pyloric Stenosis. Dr. R. L. Pittman, Fayetteville.

4. Gastric and Duodenal Ulcer from the Medical Viewpoint. Dr. D. Heath Nisbet, Charlotte.

5. Gastric and Duodenal Ulcer from the Surgical Viewpoint. Dr. Addison G. Brenizer, Charlotte.

6. The Surgical Management of Gastric and Duodenal Ulcer. Dr. Chas. S. Norburn, Asheville.

7. Gastric and Duodenal Ulcer from the X-ray Viewpoint. Dr. C. C. Phillips, Charlotte.

8. The Diagnosis and Postoperative Treatment of Perforated Gastric and Duodenal Ulcer. Dr. T. E. Wilkerson, Raleigh.

WEDNESDAY, APRIL 16, 2:00 P. M.

SECTION ON GYNECOLOGY AND OBSTETRICS

Dr. F. Webb Griffith, Chairman, Asheville

1. Chairman's Address. Dr. F. Webb Griffith, Asheville.

2. Prolapse of the Uterus. Dr. R. L. Gibbon, Charlotte.

3. Diagnosis and Treatment of Tubal Pregnancy. Dr. J. Ernest Stokes, Salisbury.

4. Disturbed Metabolism in Pregnancy. Dr. B. C. Nalle, Charlotte.

5. Transsacral Anesthesia Associated with Caudal Block in Gynecology. Dr. Thomas M. Green, Wilmington.

6. Uterine Radium Therapy. Dr. Douglas P. Murphy, Rutherfordton.

7. The Use of Radium and X-ray in Gynecology. Dr. John D. MacRae, Asheville.

TRANSACTIONS

OF THE

SEVENTY-FIRST ANNUAL SESSION

OF THE

MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

GENERAL SESSION

OPENING EXERCISES

TUESDAY MORNING, APRIL 15, 1924

DR. ALBERT ANDERSON, Raleigh, Chairman Committee on Arrangements:

The seventy-first annual session of the Medical Society of the State of North Carolina is called to order. We will open with a song, led by Dr. Robert P. Noble of Raleigh.

INVOCATION

REV. W. A. STANBURY, Pastor Edenton Street M. E. Church, Raleigh.

Gracious God, we acknowledge Thee to be our God and claim Thee to be our Father this morning. We desire that we may have the blessing of Thy presence upon our lives; that we may be able to adjust our lives to Thy will; that we may be able to plan our lives according to Thy plan; and that we may be able to fill the days with the service which Thou hast a right to expect of every man in the world. We pray Thee that Thou wilt give us insight into the larger meaning of the things we do, and of the lives we live; we also pray Thee that we may not be so engaged with the business of this crowded world, so engaged with the manifold duties of the over-crowded days, that we cannot think of Thee; and we ask that Thou wilt help us to find Thee, not apart from the things that occupy us; but may we so engage ourselves in the things that occupy us and so behold in them their spiritual and lofty meaning that we may find Thee in them.

We pray Thee, O God, to bless these men in their profession and their companions in this profession throughout the State. We thank Thee for the noble ideals that have guided and dominated the lives of physicians since there have been physicians. We thank Thee for the spirit of sacrifice and unselfish service which has been in the doctors throughout the years. We pray that Thou wilt keep in the minds of these men—and uppermost in the minds of these men—the higher

and richer significance of the profession to which they have given themselves. We ask Thee, O God, that Thou wilt help them to carry on their work, in these sessions not only, but in everything they do, in the spirit of the Great Physician, because they minister to the bodies of men and women and little children. We pray that Thou wilt help them to minister to their own souls and the souls of their patients.

We pray that Thou wilt take away from us all the spirit of trust in material things; that Thou wilt help us to use material advantage and success in the service of humanity, knowing that when we serve our neighbor we have served God. Bless us now, and guide us, and guide these men. Make them a blessing to the city here, and the city to them; and may they carry back from these meetings something that will help them more truly to reach up to the ideals they have already before them, and to lift their ideals to higher levels ever. In the name of Jesus Christ, our Master, Amen.

Dr. Anderson:

All the ex-Presidents of the Society now in this hall will please come forward and occupy the front seats.

We shall now have a word of welcome from our Mayor. Some one has said that we did not select our Mayor for his size. When you see him you will know that we did not select for size, but for quality. He is making good on his job. His is an administration that is ever progressive, going from one thing to another, ever on the upward grade. It is my pleasure and privilege to present the Mayor of Raleigh to give you welcome.

WELCOME FROM THE MAYOR.

Hon. Eugene E. Culbreth, Mayor of Raleigh

I understand that President Coolidge and myself are about the same size. (Laughter.) I was told sometime ago by someone who had seen him that we are both about the same size. I am glad to know that there is someone about my size who has a bigger job than I have.

It is indeed a pleasure to have in the Capital City—and in the city that is fast becoming recognized as the Convention City of North Carolina—your state convention. Nearly every day we have assembled in this city a convention or committee or conference of some kind. It is centrally located, easily reached by both rail and highways, and when you get into the city you find broad streets for your automobiles, although they are coming fast in number and our streets seem to be growing narrow. I understand that Raleigh has, on the whole, wider streets than most of the cities. Probably in the cities you have come from you are more congested than we are.

We have ample hotel facilities; we have historical places and other attractions where you can while away a few hours. We have, in many cases, when conventions come here, places that are of in-

terest to the delegates especially. For instance, in the case of your Society's meeting and the allied organizations, we have very good hospital facilities. We have Rex Hospital and Mary Elizabeth Hospital. Those two hospitals we are proud of. We have the State Hospital for the Insane, which your honorable Chairman has built up to be one of the best hospitals of its kind in the country. If you have never been to that hospital you should go over there. The grounds are beautiful, buildings well-appointed, and you will find there, for the people who are unfortunate as they are, a place where they are well taken care of. They have a large farm on which these patients are given employment which is beneficial to the patients.

The schools we have here also have hospitals of their own. These hospitals are modern and well-equipped. We would like for you to visit these hospitals.

In this day and time North Carolina is progressing very fast in a commercial and agricultural way. The strides being made in education and public health are unsurpassed anywhere in the United States. Notwithstanding this fact we are looking forward to the time when every county in the State will have ample hospital facilities to take care of its sick and diseased. The county hospital will be a mighty institution from which will go people restored to health and who will set up a new standard of living which will rapidly spread throughout the county.

At the Wake County Board of Health meeting yesterday we had a report from a survey that had been made in the last week or ten days for tuberculosis. That report showed that Wake County's tuberculosis problem is about the average of that of the State. Twenty-four counties have a higher death rate and seventy-five a lower. It was shown to us that the best way to help the tuberculous people of the county was to provide some place for them. It was shown to us that some counties are providing hospitals to take care of these tuberculous people. Wake County has no such hospital and the Board of Health of our county, I believe, will go on record as favoring such a hospital. You gentlemen, meeting here at this time, when many things are being done to undermine the health of our state, I am sure that those experiences you have had back in your own sections, you will bring here and put before this meeting and give others the benefit of the experiences that you have had and that will be beneficial to all concerned.

We are glad to have you here. The people of Raleigh are proud of you. There are no other men living, I believe, who have the love of individuals that the doctor has. You have more children named for you than any other class of people on earth. You are loved by them. You hear mothers speak of the different doctors, how they love them. They love them even above their pastors, because of the services which they render to the sick. We are glad to have you here and give you a most cordial and hearty welcome and hope your sojourn in this city will be both pleasant and profitable. (Applause.)

Dr. Anderson:

Dr. H. M. Bonner, President of the Wake County Medical Society, will give us a word of welcome.

WELCOME FROM WAKE COUNTY MEDICAL SOCIETY.

H. M. Bonner, M. D., Raleigh.

Mr. Chairman, and gentlemen of the Medical Society of the State of North Carolina: It is with great pleasure that I accord you a most hearty welcome to our city. We have here one of the largest—not *the* largest, but one of the largest— medical societies within the borders of our State. We have looked forward to the time when our city would have such accommodations that you would be warranted in coming to see us again. It has been about ten years now since you were here. We are proud to have you here, and we are glad to see so many present at this stage of the game. The last meeting in Raleigh was one of the largest ever held in the State, and we trust this meeting may far surpass that one. We have grown in size also. Our membership is larger than heretofore, and we bid you command us whenever we can serve you—eighty-two strong. We are glad to have you. (Applause.)

Dr. Anderson:

Gentlemen, we were fortunate in securing a speaker who always keeps up a busy life. It was very doubtful whether he could be with us this morning, but he is here and it is my pleasure and privilege to introduce to you the Nestor of the bar of North Carolina, the Honorable R. N. Simms of Raleigh. (Applause.)

WELCOME FROM THE CITY OF RALEIGH

Hon. R. N. Simms, Raleigh.

Mr. President, and Ladies and Gentlemen: One of these doctors came by here a while ago and shook hands with me, and wanted to feel my pulse, to know why in the world my hand was so cold and clammy. The truth about the business is I was scared nearly to death. I never have had to confront this many doctors before in my life. It is sometimes a terrific experience to have to confront one or two, but when you have to face fifty or seventy-five or a hundred it is some task for a layman.

I recall recently in the city of Raleigh there was a gentleman sick who was said to have ten physicians, and the marvel of the people every day was that he survived. Each day it was announced he was barely holding his own. Later on he discharged eight of them and the next report was he was rapidly improving. (Laughter.)

I don't know why they have invited a lawyer to come down here to welcome the doctors, except for the fact that we are so frequently thrown together. We all remember the story of the man who was sick and about to die, and his doctor was by one side of his bed, and

he sent for his lawyer; said he wanted him to sit on his other side, and when inquired as to his reason, he said he had tried to live his life like his Saviour and wanted to die the same way he did. (Laughter.) I don't know anybody who could stand that kind of talk about them but the doctors and the lawyers. If they told as many mean things on any other profession in the world as they do on my profession and yours, I think it would have perished a long time ago. I have thought of that incident a good many times, and thought of the fact that for twenty-five years I have had an office with a doctor on one side and a lawyer on the other—and yet I haven't lost my faith in either one.

The truth is that the lawyers have a great admiration for the medical profession. Our profession is dedicated to making folks better, and yet we remember that the legal profession has never yet been able to make angels out of men, and we are informed that the medical profession is doing that all the time. (Laughter.)

It is a hard experience the doctors have, though. Dr. Anderson used to practice medicine. I had a fine experience recently. I had to try a case over in another county, and had the privilege of riding two or three days with Dr. Anderson back and forth. I always had liked him and admired him before, but never had known him so well or admired him so much as I did after that experience. Dr. Anderson quit practicing medicine. Somebody has been mean enough to say that he got his feelings hurt. One person in Wilson asked: "Do you really believe that Dr. Anderson's medicine is good for the patient?" The other one said: "Yes—provided the directions are strictly followed." Then the other one said: "What are the directions?" "The directions," he said, "are to keep the bottle tightly corked." (Laughter.) So Dr. Anderson, having his feelings hurt in the practice of medicine, decided he would shift over to surgery. After a while, they say, the Wilson Mirror came out with the statement that a certain prominent citizen in the town of Wilson had been carried to a hospital, that Dr. Anderson would operate on him tomorrow at three o'clock, and wound up with the statement that he would leave a widow and five children. (Laughter.) Dr. Anderson said he wasn't going to stand that kind of treatment, and came up to Raleigh and started in as an Alienist. I understand that some time ago somebody said to a man: "Why don't you have an Alienist to examine your boy?" "Not for me," he said, "plain American doctors are good enough for me. I don't want any alien doctors." (Laughter.)

You know, it is hard to decide between surgeons and doctors anyway, but most of us would rather have a doctor than a surgeon. I understand sometime ago—I don't know whether it was Dr. Royster or not; it may have been Dr. Royster they tell it on—a man fell in an epileptic fit and was carried down to the hospital, and when they laid him out and took his clothes off they found a paper pinned to the lining of his coat. They read the paper and this is what it said: "To the House Surgeon: I want you to know that this is just a plain fit; that this is not appendicitis. My appendix has already been removed—TWICE." (Laughter.)

You know I have a great veneration for Dr. Royster. Way back near the beginning of his practice—I was a very small child at that time but have a sort of faint recollection of it—he launched out in the city of Raleigh to be a specialist, to do nothing but surgery. A lot of folks said "He can't succeed at that. The town won't support a surgeon, to do nothing but surgery." And yet he did, and when I come to welcome you to the city of Raleigh I find it in my heart to say that I am glad to welcome the doctors and surgeons of North Carolina to the city that is the home of Hubert Royster, a man who has been a credit not only to his native city, but to the state of North Carolina. (Applause.) It wasn't long ago I read with pride that in the great hospital of the Mayos one of the places on the wall is occupied by a picture of none other than Dr. Hubert A. Royster of North Carolina. Raleigh is rich, the State itself is rich, in the physicians and surgeons who have made this their home. There is no finer body of men to be found anywhere. I think of the fact that we have in our citizenship here, and claim in common with North Carolina, that man who, in connection with the work of the State Board of Health, has not only become famous in the state of North Carolina, but throughout the South. I remember with pride that when I was the President of the Chamber of Commerce of Raleigh, we had the privilege of entertaining in our midst a body of gentlemen from abroad who had come to this country to examine the work done for the health of the people. They were told "So far as the South is concerned, what you need to see is the State of North Carolina." So they came to the State of North Carolina to study the magnificent work that had been done by the State Board of Health. I am proud of the work done by Dr. Rankin, a man so eminent in his profession that he is now borrowed by the United States, loaned by the State of North Carolina for the good of the world. (Applause.) We are proud of the fact that here in this same town is a citizen who likewise may be claimed by your membership as a citizen of North Carolina—a man who went out here on a hillside and took a lot of old steers and a few old worn-out horses, and set to work to build up—What? For the State of North Carolina, a laboratory of hygiene which has ministered to the health of thousands and hundreds of thousands of people, and which, I understand as a layman, is regarded as one of the finest in the United States of America—Dr. Shore. (Applause.)

It is a strange circumstance that we find here Dr. Rankin with an organization trying to do away with germs, and on another hillside Dr. Shore, making germs grow as fast as he can. (Laughter.) It simply goes to show what the medical profession is capable of.

Speaking of germs—we have made great preparation for your coming. We have a police force out there as never before in our history. The Mayor told me that he had had the city searched and if there was a germ to be found in the city of Raleigh it would have to be smaller than a wiggle-tail.

The City of Raleigh is glad of your coming. I am sorry for the rest of the State though. I don't know what is going to happen in the State of North Carolina while all the doctors are assembled in the city of Raleigh, and yet somebody has been mean enough to declare that after one of these meetings the health of the State improves. (Laughter.) I take it that means you learned so much that you went back and put the finer things in practice and improved the health of the state.

However that may be, the passing of a doctor in a community in which he has lived even for a brief length of time is a distinct loss to that community. I know of but three groups of men who are so ranked together in the regard and esteem of this or any commonwealth as the preachers, the doctors and the lawyers. Who else so hold the esteem and confidence and trust and faith and love of the people in their hands as the men in these three professions? Of course, I take it, we would say the preachers come first, and I would be modest enough to say for the legal profession that the doctors come next, and the legal profession follows. I recently heard a preacher complain that the people had more faith in the doctors and the lawyers than they had in the preachers. He said, "When your doctor comes in and tells you this is the thing to do, you do it; and when your lawyer advises you that this is the thing to do, you do it; but when you go to your preacher and ask him, you take his advice with a grain of caution, or disregard it, as you please." The truth about it is that there is nobody who so holds the absolute confidence of the people of a community as the doctor. He has their secrets, their trust, their confidence. You know we lawyers run up with the doctors quite frequently, in two ways, but we never find them out in these ways. One way is when they come into our homes when there is sickness, when they are so "professional" you hardly see the man at all. The other is when we meet him in the court room, and he doesn't get a fair showing there. Somebody asked another one: "What is an attorney?" He said: "I will tell you. An attorney is a man you employ to protect you against the other fellow's lawyer." I think about that sometimes in connection with the expert witnesses. What is an expert witness? An expert witness is a physician you get on your side to protect you against the doctor on the other side. (Laughter.) I am somewhat in sympathy with Dr. Knox's theory, that the state ought to furnish expert witnesses to testify in cases. That is one of the things he has advocated for a number of years. I think it would be a fine idea and would furnish the court with disinterested opinion and save the doctor from a lot of bull-ragging. We are all guilty of it; I plead just as guilty as almost any other member of the legal profession. Recently I traveled with a physician and a trained nurse, and we had been through a gruelling experience where the lawyer on the other side had grilled our doctor and our nurse. We were riding along in the car and someone said "Suppose that other lawyer would get sick. They would rush him right down to our hospital," and somebody else said "Wouldn't you have a fine

chance to get even with him then?" (Laughter.) You know what they said—"We would do our utmost to give him the very best that human skill and ingenuity could do to save the life of that man," and that is the spirit of your profession when it comes to the business of saving human life. (Applause.) A lawyer might abuse a doctor on the witness stand, yet he would lie down and take the medicine that doctor gave him and put himself beneath the knife of that surgeon, with a supreme confidence that that physician would use his utmost skill to relieve his suffering or save his life.

It is a great and a worthy profession that I have the honor and privilege to welcome to the city of Raleigh today. It is a body that any citizenship would be glad to have come into their midst. I read with gladness the other day that North Carolina is one of the first states that had a State Board of Medical Examiners. What did it mean? It meant that at a time when many wanted to be allowed to practice without receiving a license, the medical profession, with that high love of the people and high zeal for the welfare of the state, said that we should admit only men who are highly qualified to practice their profession. I admire you for it. I am glad of the fact that it takes a longer time for a man to get into the medical profession than any other. Keep it so! The truth of the matter is my profession is now inquiring if admission to it isn't too easy. This body of men has held high the standard, and I congratulate you for it and the people of North Carolina admire you for it.

As this meeting was opened with prayer by a minister of the Gospel, my mind went back to the fact, while I was thinking about doctors and lawyers, that we share with you the pride we have in the recollection that One came to this earth who wrought as never man wrought, and ministered as never man ministered; and there were two proud titles he claimed—One was that he was the Great Advocate, which our profession can claim with pride, and the other was that he went about doing good and claimed for himself the title of The Good Physician.

Gentlemen of the North Carolina Medical Society, we are glad to have you in our midst. We are grateful to you for coming to the city of Raleigh. It is a pleasant recollection that seventy-five years ago the Medical Convention organized itself in the city of Raleigh. Not a man of you was here then; I don't believe I see a man who could have been here then. I saw a little statement—I first read it in doubt—that said if the people of North Carolina could be assured that for the next seventy-five years the medical profession of North Carolina would be as completely dedicated and consecrated to the welfare of the people of North Carolina as they have been in the last seventy-five years, the future could hold no other such fine assurance that all would be well in the State of North Carolina. I said to myself at first "This is a fine flourish, but surely it cannot be deserved." And then, as I gave it thought, and a second thought and a third thought, I said "The man has spoken the truth." The fact about the business is that there is nothing that could be said to the people of North Carolina today that would so assure their hearts of

the future welfare of the people of North Carolina as a knowledge that the medical profession of North Carolina shall have the same spirit of devotion, with of course a higher measure of skill and ability which is yours from day to day and year to year, as your forefathers have had in this profession in the last seventy-five years of the history of the state.

And so, we are glad that you are here; glad to be honored by this meeting in our midst, and we say to you that the city is yours, anything that is here is at your command while you are here. You grace our city with your presence. Linger as long as you will. May God bless you in your great work. We bid you God-speed in it as the years come and go. (Applause.)

Dr. Anderson:

The response to these addresses of welcome will be made by Dr. Seavy Highsmith of Fayetteville.

RESPONSE TO ADDRESSES OF WELCOME.

Seavy Highsmith, M. D., Fayetteville.

Mr. Chairman, and Fellows of the North Carolina Medical Society, Ladies and Gentlemen: I am called upon, in the absence of Dr. Frederick Hanes, to respond to the hearty greeting and cordial welcome which we have just received from the Honorable Mayor and the Honorable Mr. Simms to the Capital City, and also from Dr. Bonner in behalf of the Wake County Medical Society. It has been the custom when a substitute was needed to respond to such a cordial welcome as we have received, for the Chairman to call upon a real orator, like our beloved Dr. Cyrus Thompson, or some of the others we have in our profession. I feel somewhat in the position of the old darky when called upon to change a twenty dollar bill: "I thank you, Boss, for the compliment," he said, "But I sho' aint able to accommodate you."

In 1588 the gallant Sir Walter Raleigh, on his second visit to this country, when we were yet a part of that vast territory known as Virginia, granted a charter of incorporation for the city of Raleigh, the name which North Carolina has since, with merit, pride and gratitude, bestowed upon her most favored city. Now you are a rich and prosperous city—rich in history, rich in your beautiful buildings, your churches and hospitals and well-known institutions of learning; rich in all material things, but best of all, rich in your noble, cultured citizenship. We love to think of the illustrious lives of the medical men who have honored—and who are honoring—our profession with their noble work, their untiring and unselfish efforts in your midst. I wish that I might have time to pay each a fitting tribute, but we are here this morning to discuss the great medical problems of today, some of which we feel that we have conquered; others about which we are just beginning to learn. We are here from the western hills and lofty mountains; we are here from the eastern

shores and coastal plains. We are here from the sandhills and the noted piedmont section; we are here from the north and the south; from hamlet, town and city—all happy to meet with you and happy in your cordial greetings. We who come from Fayetteville and the upper Cape Fear section are especially delighted to meet with you, as we bring our able and genial Scotchman, Dr. J. Vance McGougan, whom you have so wisely chosen to preside over this meeting. The Seventy-first Annual Session of the North Carolina Medical Society is unusually fortunate in having been invited and so cordially welcomed into our Capital City. We are pleased to meet with you in this new and splendid hostelry. In behalf of the Medical Society of North Carolina, let me most sincerely thank you. (Applause.)

Dr. Anderson:

We have now come to the President's address, and this is such a task I feel unable to meet it, so I have just spoken to my friend, Dr. Cy. Thompson, who will present the President.

Dr. Cyrus Thompson, Jacksonville.

Mr. Chairman, ladies, and gentlemen of the Society: A man never knows when he is safe. His liabilities are always existent and frequently incumbent upon him. In my youth I was exceedingly timid, and if I had been called upon as suddenly as I have been now, if I had got up I would have gone down, and if I hadn't gone down I would have gone 'round and 'round and 'round in a whirl. But I am old enough now—because I am one of the Patriarchs in Israel—not to get excited about anything at all. One day I was out with a patient and there was a little flurry and when it was over she said: "You didn't get excited?" I said "No, I didn't get excited at all. I must keep my head in emergencies. If you had died I wouldn't have gotten excited. It would have been a perfectly natural thing." (Laughter.)

Somehow or other, we will always get there: A few years ago it is said that a man went up to Heaven, and his wings were coming out right new, and an old-time "Heavener" came to him and said: "How did you get here?" And he said: "Flu." (Laughter.)

I don't know what in the world to do with the presentation of a Scotchman who comes from the upper Cape Fear. As an American citizen, I can do so very cordially now, though something like a hundred and fifty years ago, if I had come to a North Carolina session as patriotic as this and had presented a Cape Fear Scotchman they would have said: "Here, he is not our sort of folks. You better be careful how you present him." The Scotch, you know, were rank loyalists. But we are all patriotic now. The Scotchman are just as patriotic and as good Americans as the Irish-Americans, or the Dutch of Pennsylvania.

Now, out of all the physicians in North Carolina of very excellent qualities, here stands my handsome giant friend, J. Vance McGougan. I don't know what the J. stands for, but that is all right—Vance McGougan from the Cape Fear, a genial gentleman who married late in life, and when he was married saw at once the folly of his old way

and struck up pretty soon on that old hymn, "This is the way I long have sought, and mourned because I found it not." He is no longer a bachelor; no woman need set her eyes on him now for all his good looks; for "He is a married man."

They just wanted me to talk a little, because it is customary. A great many things are done because they are customary. You remember the lady who went to the surgeon and said: "Doctor, is an operation absolutely necessary?" and he said: "Well, no, it is not absolutely necessary, madam, but it is customary." (Laughter.) It wasn't absolutely necessary for me to say a thing, but it was customary; and I am wonderfully glad now I am through with it; because it is like the old fellow with the red nose who called in the doctor, and the doctor said, "It is drink, drink, that's it. You will have to quit, cut it out." He said: "Doctor, is it as serious as that? I was in hopes it was something that could have been cured by a simple operation." (Laughter.)

Now I am sure I take very great pleasure in presenting the honored head of this Society, my good friend from the ancient city of Cross Creek, as patriotic now, he and his Klan, as any American citizen. (Applause.)

PRESIDENT'S ADDRESS.

J. V. MacGougan, M. D., Fayetteville.

It is common to hear the retiring President speak of the appreciation of the honor conferred on him; the highest honor in the gift of this Society, and emphasize his appreciation, if possible, by calling to witness the high standing, natural and professional ability, and great accomplishments of the men in our profession whom you have honored in like manner. Let me say that none who have occupied this office in years gone by are more appreciative than the speaker. We should never forget, however, that honors never fail to bring responsibility, and we cannot, if we would, accept the one without having placed on us the other. We felt one year ago, and we feel it more keenly today, how undeserving of his honor and how little able we were to shoulder the responsibilities of this office; and but for your confidence and support the honor never would have been given to me; but for your cordial support, co-operation and encouragement the responsibilities would have been too heavy to bear. And may I crave your continued support, co-operation and encouragement through this session and for all time.

In the light of this address I shall indulge in no flights of oratory nor shall I attempt to amuse or even instruct my audience beyond the simple statement of facts and the lessons to be learned therefrom.

Two years ago you heard that splendid address by your President entitled: "The qualifications of a Successful Doctor," and one year ago another, by my predecessor, equally as good, on "Looking Forward," and should the importance of what I may say justify a title, it may be called: "Whither are We Drifting?"

The usefulness of any organization is measured by the object which calls it into existence and the manner in which its duties are performed. Modern life, with its practical conception, has made it clear that the duties of the Physician, either individually or collectively, are three-fold: First, his relation to the public; second, his relation to the profession as a profession; and, third, his relation to his confreres. Humanity's demand for improvements determine our professional attitude towards public matters as well as private affairs, and, in response to this, our sect has become at once progressively aggressive in its relation to the public and the public welfare. As a profession, as well as individually, we are greatly interested in the work of our public institutions, especially those that are under the control of physicians or which have been established for mental and physical relief.

We are proud, and justly so, of what the Medical Society of the State of North Carolina has accomplished. We rejoice in the achievements of our forefathers. Our inheritance from them is the most sacred thing we possess. Upon the history of our Society is builded our professional character, our ethics; our reputation in State and Nation; our ambitions, our expectations for the future. That the Society has made good in the discharge of its many duties and responsibilities to the public and to the profession cannot be disputed; but no matter how well we have wrought, we should strive to do far better work in the future than anything we have yet accomplished. The opportunities before us are real every-day propositions. So long as a Physician exercises reasonable skill in his professional capacities, and so long as he conducts himself as does the average citizen, he has the right to exercise the functions of a Physician without let or hindrance. Under the laws of this and other civilized countries singular powers, privileges and opportunities are delegated to the Physician, and because of these he is under singular obligations. How well physicians have discharged their obligations is evidenced by their past achievements and present activities. Through their service in the cause of humanity physicians have merited and have held the confidence of their fellow men. On entering the medical profession every physician tacitly obligates himself to further its claims and ideals in the following directions:—

1. By striving to recognize disease and the conditions underlying it.

2. By trying to aid nature in the cure of disease and by trying to relieve suffering.

3. By endeavoring to prolong life.

4. By trying to bring about healthful conditions in the individual, in the home and in the masses.

5. By working singly and with others for the prevention and control of disease and for the promotion of health.

I have outlined what seem to be some of the aims and ideals of modern medicine, also what seem to be some of the obligations of the individual members of the society in furthering them. Is there one

among us who can claim perfection in complying with any of them? Perfection is never attained by any man in any line of endeavor. The natural tendency of mankind is to move in the direction of least resistance. No other individual better knows the inertia of human nature and of his own nature than does the physician. Therefore, every one of us engaged in the practice of medicine needs to keep ever before him the physician's obligations.

Unquestionably the past achievements and present activities of our own members are comparable with the best endeavor anywhere in the medical world. But cannot each one of us become more fully aware of the physician's obligations and try just a little harder to meet them? An enlightened public is rapidly fixing its gaze on all those exercising the functions of the physician, and it is measuring, weighing and judging them. It does not demand perfection from any man or woman exercising these functions, but it does demand reasonable efficiency and reasonable skill. It demands nothing short of one best effort in the discharge of a physician's obligations. Public opinion, expressing the voice of humanity, demands the glorious achievements of past generations, and of the present generation of physicians demands, and our own consciences demand that we try harder than ever before to discharge our obligations in furthering the aims and ideals of our own profession.

Just a word as to Program Committee: Our programs reflect not only the best local efforts, but through them during recent years an ever increasing number of invited guests have helped to enlighten us. They do afford a kind of a post-graduate instruction needed by every one of us. No one can question the general excellence of our programs, reflecting as they do medical endeavor comparable with the best anywhere.

Why then, one may ask, is our average attendance so small, when you compare it to the number of physicians in North Carolina. Can it be that inertia—but only in reference to attendance—has so benumbed us that we need the stimulus of an out-of-the State guest to fill this hall, or can it be possible, as has been so often whispered, that we are lacking in proper appreciation of the capacities and achievements of our own members? Let each of us answer these questions as he may. Man is a social being and physicians are very much human. One of the needs of our Society, made mandatory by our constitution, is some means of bringing its members into closer, more intimate relationship. If we are to work with each other in the cause of humanity, we must know our co-workers. Nothing promotes co-operation, that basis of all good work in a society such as ours, like knowing each other. Not only should the older members become better acquainted, but we should devise some means whereby the new members may speedily become living and active factors in the work of the State Society.

Are there too many societies? "The mania for Medical Meetings," a phrase culled from a recent letter, somewhat more than hints at the etiology of a disorder of the medical body politic that is attracting too many doctors. There is a suggestion in it not only of

madness but contagion. Scarce has one medical organization matured before another is in the throes of birth; the parents of each in succession enthusiastically presenting its merits and claims to the right of support, emphasizing its greater importance and value over, and not infrequently depreciating its predecessors. The old time County Medical Society with its monthly meetings was a fundamental and much needed organization which served the purpose of keeping its members in touch with current medical events and with each other. Supplemented by annual meetings of the State Medical Association and of the American Medical Association, it was a sufficient means of supplying a course of study combined with desirable social factors. For the young man not over-burdened with practice and perhaps eligible for membership in but one such organization, the meetings of these societies were alluring. But as he grew older and was urged to participate in the labors of successive groups, a problem was forming, namely: how might he find time to attend the meeting of all of them and give a little of his time to his family? Strange, isn't it, that the Doctor's family expects this of him? Keep up with current medical literature, read a newspaper or magazine or novel occasionally. Yes, some doctors think it advisable to waste time that way, however; a short vacation such as he insists is necessary for everyone but himself, and in odd moments earn a living for himself and his dependents. From May to September life is a nightmare of Pullman cars, strange hostelries, host of new faces, scores, yes hundreds of new subjects, each of which incessantly claims his attention and study, and he flies from hither to yon and back again seeking knowledge which seems always just beyond his ken. He resumes his work to be interrupted by a sectional meeting, and three to five more days are gone. He stops at home only long enough to change his socks, grab a fresh suit of pajamas and instruct his office attendant "for the love of heaven" to get out the monthly statements and try to collect a little money, and he is off again. Three or four days later he returns full of knowledge, bad food and tobacco smoke, and occasionally the remnants of the good old days before Mr. Volstead was ever heard of, and settles down to work again trying to figure out how he can make both ends meet. Overdrawn you say? Not a bit. Many men, members of this Society, have attended just such a series of meetings during the past summer. *Gentlemen; is it worth the while?*

Too many County Societies sleeping: Too many of our County societies are sleeping, arousing just enough at necessary intervals to keep their names on the books. The council is held responsible for them under the constitution and by-laws of the State Association. It is hard to believe that the councils in some instances realize their responsibility. I, personally, have heard reports made at some annual meetings which indicate that they do not. Councillors are supposed to visit—actually visit—the societies in their respective districts at least once a year. How many do so? Councillors are supposed to inquire into the condition of the profession, to organize component societies where none exists, to be peace-makers and censors, to improve the zeal of county societies. These things cannot be done by writing a

pen letter ten days before the annual meeting and then turning in what purports to be a report which, formulated in that manner, nearly always makes it appear that everybody is happy and that the medical organization is 100% efficient when, as a matter of fact, the formality of a funeral is about all that is necessary. Gentlemen, I say this with the kindest of feeling.

The Deadhead and the Deadbeat. There is a large economical loss each year to the medical profession occasioned by its attitude toward "Deadhead" practice. No other business could possibly survive such a large percentage of loss. There are some physicians who think they must cater to every individual or lose their friendship and their practice; but they are wrong in their judgment in this matter, and if they would refuse service to such except cash in advance, physicians would be much better off financially and the "Deadhead" would be much better off morally—there are meritorious exceptions, of course. Many physicians have the mistaken idea that being busy brings business and they accept any case, thinking if they are busy it will impress the public; that it is a good recommendation and that it will bring more business. Many a physician has found out to his sorrow that in keeping busy with this kind of practice he has not had time to keep up with the advances in medicine and he is gradually dropped by the better class of patients because he is an "old fogy." Of course, every reputable physician has some "deadhead" business; we here can include in this the members and families of the profession, immediate relatives, influential friends and the Clergy. In the case of a clergyman who commands a good salary and is a real fellow, I can see no reason why he should not be charged a reasonable fee, and I feel sure it would be his pleasure to pay for services rendered. He is entitled to no consideration and no physician need feel any pity or obligation toward him.

Contract Practice: I wish to mention here contract practice. By contract practice we mean that the physician agrees for so much a year to attend the family or a corporation, as it may be. This system has the following objections: As all practitioners know, there are many persons who will revel in medical service when it is free or prepaid. The demands on the contract physician's time by these persons are based on such trivial grounds, in many instances, that the physician is kept busy by them. Such cases would take care of themselves if a fee had to be paid for each call. Hence this practice becomes monotonous and irksome; the physician does not take time to give proper study to the individual case, and he tends to fall into a rut of routine prescribing and dispensing that is not always most beneficial to the patient and is really a detriment to himself. The families feel that they have bought this service and, as is the case with the telephone, will use it whether needed or not. Such a contract practice is sometimes quite remunerative to the physician, but it is not conducive to scientific and careful work. For this reason it is not so detrimental to the outside practitioner as one might think, as the beneficiaries many times call the outside physician and pay him the regular fee.

Fee Splitting: Gentlemen, I realize I am treading on dangerous ground, but I have heard this discussed, as I went over North Carolina trying to attend as many County and District Societies as possible, more than any one other subject, except our attitude towards the different cults, and I expect to pay my respects to them before I am through. I wish at this time to call your attention to the pernicious, if I may say, habit of fee splitting as indulged in by many members of the profession and members of this Society, which is so strongly condemned in the principles of medical ethics as laid down by the American Medical Association. Let me quote you what they say, lest we forget: "Principles of medical ethics deal specifically with the subject of the secret division of fees." It declares that it is detrimental to the people, degrading to the profession and, therefore, unprofessional to give or to receive a commission or divide a fee for medical advice or surgical treatment unless the patient or his next friend is fully informed of the transaction. This should be a law unto the profession; but unfortunately there are many physicians who disregard it. I would suggest that every Physician who makes a practice of fee splitting may see the error of his way and that the profession may present a solid front to the world concerning this evil. It is not to our credit that State or Federal laws must be enacted to cure an evil that the medical profession can cure without medicine or operation. All they need is the Golden Rule and a little more courage.

The Attitude of the Medical Profession Towards Cults: A review of the history of the medical profession will show that the problem of the quacks and the cults is as old as the profession itself. There have sprung up from time to time groups who professed to prolong life and alleviate human suffering by every means imaginable; but the outstanding feature is, and history will bear undisputable evidence of this, that not one has survived any considerable period of time. The regular medical profession is the only group who offer themselves for the prevention of disease and the amelioration of suffering and prolongation of life that has stood the test of time. It can point to an almost unbroken line of succession from the mythical Æsculapius to the present day. There is a reason for this, and I believe it is found in the fact that the regular medical profession has always stood on a foundation of truly scientific fact. It has ever been universal in its acceptance of any means whatsoever for the physical good of humanity. No restricted system of pseudo-religious bent has ever been adopted to the exclusion of all others. And in evidence of this broadness, it may be said that the regular medical profession has been taught and has learned from the cults many things in the past. One group of irregulars showed us our error of over-medication, another that pain and sickness may exist though there is no organic disease. But by the same token, we have never subscribed to the proposition that no patient needs medicine or that all disease is caused by a state of mind. As in the past, so we have at the present time, and, in all human probabilities, will ever have the cultist and quack to deal with. But the fact that each sect has

but an ephemeral existence should not deter us from our duty to the public; for the great number of cults and their constant recurrence under one name or another, are a real menace to society, though not a very dangerous one. However this may be, we would not be upholding the traditions of our profession if we did not inform the people of the existence of a menace whether it be smallpox or chiropractic. But this must be done in a manner that is free from any suspicion of greed or gain or sordidness on our part and with a dignity that is also a tradition with our profession. Silence does not always mean consent, it may mean contempt. Perhaps some will say that Barnum's axiom still holds true, that a sucker is born every minute. This, I believe, is true; but I am one who believes that the sucker can be educated and the sucker today may not be a sucker tomorrow. I also believe that the people themselves are doing some good hard thinking about matters of this kind which pertain to their welfare and very existence. When a layman gets to thinking of the matter of what constitutes a good physician, he is reluctant to fall to anything that has the appearance of irregularities: the people should know that the first section in our principles of medical ethics state that the regular physician is a member of a profession that has for its prime object the service it can render to humanity; reward or financial gain should be a subordinate consideration. The people should also know that there are more than one hundred thousand physicians of the regular school in the United States and most of those physicians are members of the great American Medical Association and of their respective county and State medical societies, and their individual and united object in life is to keep the people well and to restore them to health if they get sick. These physicians of the regular school of medicine get their training in schools and hospitals like Harvard, Mayo's, Hopkins and hundreds of other hospitals and universities over the United States that teach the same methods of practice that are taught in the great seats for medical learning and research. These one hundred thousand regular physicians scattered throughout the United States in every city, town and community can and should extend a powerful educating influence over the people as to the things they should know about selecting a physician. The people should also know that with all the accumulated knowledge of thousands of years of scientific research the fountain of youth has not yet been discovered and there is nothing that is a panacea for all diseases, and while each man in the medical profession well knows that he has been instrumental in prolonging many lives in his own individual practice, we know there is no antidote for death. "They that walk the earth are but a handfull to those who slumber within its bosom." The people should also know that the medical laws of the State are for the people of the State and not for the Doctors. But the laws are constructed by the people and should be construed by the people to mean that their intent and purpose is to enable the Doctors to better safeguard the health of the people. In this enlightened age it wont do to let the blacksmith extract teeth, the barber do surgery or the jack-of-all-trades practice medicine. The people must know that it is necessary to have laws to find out

who is qualified to do these things. Do you know that three years ago a bill was introduced in the General Assembly of this State, through the influence of the Osteopaths of this State, asking that they be allowed every privilege to practice medicine that a regular has? The people should know, however, that some of these cult's claims for their methods in the treatment of diseases is unsound and, being unsound, is dangerous and makes them unqualified in other lines of medicine—a dangerous man in the community. The Chiropractor claims not to believe in the germ theory; claims that by adjustment in the spinal cord to be able to cure all diseases. This makes him a dangerous man in the community, for he is liable to make his farcical adjustments on patients with acute infectious diseases while the infectious organisms are spreading with more than geometrical progression. We should be able to tell the people that the Chiropractic propaganda is unsound and unscientific, and they should know it so well that they can say to their legislator: if Chiropractic is right, then the whole system of science is wrong; if it is right, we had as well tear down our great institutions of learning, do away with our great and small hospitals; tear down our research laboratories; scatter to the winds the accumulated knowledge that science has garnered through the ages, and convert the energies of more than one hundred thousand good physicians in the United States into a conglomeration of spine pinchers and scheming advertisers. Now, as long as the followers of any cult can qualify to practice medicine through the channels that regular physicians do, they may be entitled to the privileges of doing as much practice or adjusting as the people may allow themselves to be inflicted by such treatment; but such people should be brought to a full knowledge of what they are doing and that they are doing it with their own free will and accord. Then let Barnum's axiom take its course. The people should know that it is best for all humanity that every person who practices medicine, or any form of it, or cult which involves the treatment of the sick, or the institutions of methods to keep people well, should qualify by a thorough examination before a State or a National Board, unprejudiced in its principles, skilled in scientific attainments, that knows the human body thoroughly in health and in disease of all kinds, and who can make a diagnosis of the condition or disease that is being treated. We must also tell the people that while the followers and friends of the different cults are lobbying around our State House trying to fool our legislators and convert them to a belief in their form of practice in order to get laws passed to favor their unscientific methods, the regular physicians are going in and out of the houses over this Great State doing all in their power, with science at their command, to alleviate the suffering of the sick and afflicted. The people should know that the regular physicians in the world cure ten thousand cases compared to one that the irregular cures.

Gentlemen, as a member of the regular medical profession, I want to tell you in the lapse of time since the organization of this great State Association down to the present minute the regular medical profession of the world has been doing things coincident with

the advance of science, and by virtue of the organization the profession of North Carolina has been keeping pace with the advancement of science in other parts of the world. I wish to tell you, and I wish you to tell it to your legislators and to the people, that it can be said without fear of successful contradiction that every discovery pertaining to medicine and surgery of any importance in the last seventy-five years has come through the thought and labor of the regular medical profession or of those directly connected with it, and if a charlatan, a quack, an irregular of any kind has recorded or worked out anything in science that has been worth or will be worth the price of a smoked herring, it has not been brought to light to enrich and bless humanity. Anæsthesia, antisepsis, asepsis, diphtheria antitoxin, typhoid vaccine, which has saved hundred of thousands of our people and has been an economic saving of millions of our money; X-Ray, radium, heliotherapy, the mosquito as a transmitter of malaria and yellow fever—a discovery which alone is worth billions of dollars to the human race annually, hookworm, serumtherapy, vitamines, the use of the microscope, the use of the opthalmoscope, the use of the cystocope, the discovery of numerous micro-organisms, among them being the tubercle bacillus, gonococcus, streptococcus, spirochaeta pallada, the discovery of the Wassermann reaction, the widal reaction, Salvarsan, Insulin, and a thousand and one more things associated with the practice of medicine in the form of medicine itself, or sanitation, prevention diagnosis and treatment. These are a few of the things that have been brought to light principally by the regular medical profession or of those directly connected with it, and it is well for the regular profession to hang these thoughts in the memory of the people and in the memory of those who make the laws for the people in such a way and with such emphasis that they can never be forgotten.

One other thought and I am through. *What is the remedy for some of these every day irregularities?* Education, legislation. The former I will leave for public health workers to take care of; the latter I will discuss briefly:

In view of the disasters that have overtaken medical endeavor to promote legislation honestly aimed at protection of the public against incompetence and the imposition of pretenders, our legislative committee should devote a portion of its time and efforts to studying out the causes of such disasters in the past with a view to their avoidance in the future. Reviewing the history of medical legislation it was found that while our State Medical Society had from time remote had a standing committee on legislation; the personnel of this committee had been of the highest order, and the members of which had given unsparingly of their time and effort in the performance of their delegated duties. Only too often their motives had been misjudged to an extent calculated to "sour the milk of human kindness" and to make the results of their self-sacrificing efforts anything but satisfactory. The cause of such misinterpretation of motives and miscarriages of well-meant endeavors are not far to seek. A review of such activities reveals that most of them have been in the nature of

defensive efforts inspired by impending or actually progressing invasions of the realms of curative medicine. Anything in the way of a constructive legislative program, looking to a broader and better application of medical science, preventative as well as curative, originating in the medical profession and having the sustained and united support of the medical profession, the State and County medical societies, is conspicuous by its absence in the history of the past legislative activities. While our county societies usually, if not always, responded to the S. O. S. of the legislative committee and flooded their respective Senators and Representatives with the stereotyped form of telegram, urging support of or opposition to the specified measure, the profession has been silent on other occasions when legislation no less important for conserving the health of the community (but less directly touching our individual interest) was pending. This, and the apathy that too often characterizes the local practitioners of the Senator's home county in matters that call for concerted and sustained activity of these local practitioners, are not calculated to impress the representative of the people with the idea that the medical profession of his county or his district count for much as an influential aggregation. Too often it is the attitude of his own family physician, or of some medical acquaintance, that determines his vote, rather than a definite, well-considered and well-formulated expression of the medical practitioners of his locality backed by the convincing echo from other agencies that express organized lay interest in life and health-conserving legislation.

Difficulties of Medical Legislations. When diploma-mill doctors deal death the public is horrified. When genuine doctors ask for laws to protect the people from quacks and charlatans, a large and vocal part of the public sides with the get-degrees-quick imposters, and takes up their cry of bigotry, monopoly and persecution. This is the history of medical legislation everywhere; and since legislators hear the voice of the people much more clearly than the voice of the expert, the diploma-mill doctor, who lacks knowledge, training and professional honor, continues to practice. Rarely do physicians of sound judgment seek election to state legislatures. Or, if they do, it is in a half-hearted manner and without adequate support from the other members of their own profession. As the result, we have the spectacle yearly of state legislatures perpetrating the most asinine legislation in relation to health, to medical licensure and to education. In the meantime the legislative committees of state medical societies, in their reports, annually deplore the legislative actions taken and express futile hopes for improvement in the future. The way for physicians to get for the community sane health, licensure and educational legislation is to take a hand directly in its making. Unfortunately, getting elected to do this is not so easy for the physician. He has so long and so assiduously cultivated the narrow view that his duty is solely to the patient that the patient, when turned voter, is apt to regard the doctor as his personal attendant only and without knowledge or experience beyond that function.

And now, Ladies and Gentlemen, I am through; any suggestions that I may have made please look upon them as constructive and not destructive; any mistakes that I may have made came from my head and not my heart, and now as I rapidly approach the sunset of my life, one of the happiest thoughts that I shall ever have is that at one time I was your President.

After announcements by the Chairman of the Committee on Arrangements and the Secretary, the Society adjourned for the various Section Meetings.

TUESDAY, APRIL 15, 1924, 8:00 P. M.

DR. J. L. SPRUILL, JAMESTOWN, FIRST VICE-PRESIDENT, PRESIDING

THE MEDICAL ASPECT OF MENTAL DEFECTIVES*

JAMES K. HALL, M. D., WESTBROOK SANATORIUM, RICHMOND, VA.

I am keenly sensible of the honor fallen upon me in being permitted to mingle with those high in authority in the medical and the civic life of the State and with learned men from far away. But I am in the grip of an enbarrassment that will not be relieved by all the pleasant features of this splendid evening and this inspiring occasion. Your president, mindful of my affection for him, but deluded by the belief that I know that which I am wholly ignorant of, kindly urged me to meet with you and to speak to you about the wide-spread ignorance of the anti-social tendencies and the criminal waywardness of certain ones of God's children.

How long must one sometimes wait for comforting compensation for the hard and difficult lessons learned in the Sunday-school days of childhood!

The merest intimation from your president that I could find myself able to say to you one enlightening word about this abstruse and this profound problem relating to the unequal distribution amongst the children of men of that Divine Gift—mentality—hurried me back along the pathway of memory to the Biblical portrayal of a great coronation. "In Gideon the Lord appeared to Solomon in a dream by night; And God said, Ask what I shall give thee. And Solomon said, I am but a little child, I know not how to go out or come in. Give, therefore, thy servant an understanding heart to judge thy people, that I may discern between good and bad; for who is able to judge this thy so great a people? And the speech pleased the Lord, that Solomon had asked this thing."

*Read by invitation.

How frequently that prayer must spring from the hearts of all other good men who are high in authority and who are heavily laden with responsibility! How comforting and how helpful it is to me this evening to reflect that the mighty Israelitish King, endowed with all human knowledge, was willing to confess in all humility his inability and his inadequacy to understand his own people!

When your president's summons came to me I felt in my desperation and helplessness somewhat like that other King of Israel must have felt when the mighty ruler of Syria sent to him Naaman to be healed of his leprosy. I would to God there was coursing through this splendid State, from West to East, some river like unto the Jordan, upon one bank of which we physicians might stand and into which we might send all the sick and halt and blind and maimed and dwarfed in mind and in body so that they might come out on the thither bank cleansed and made whole! Would to God that we might issue orders with such therapeutic results!

But this great State, in certain afflictions little less terrible in days lately gone by than leprosy once was in the East, sends to its sick citizens a message as simple and as cheering as that of Elisha to the Syrian general. Your State laboratory says to the citizen: Take this and you will not have smallpox; to the mother: Give this to your child, and it will not have diphtheria, and if it already has the disease, take this and it will be made well; to the whole people the State says: do thus and so and typhoid fever will be no more; also, to the mother: let these drops go into the eyes of the new-born babe, and it will not be blind. To the tuberculous, to the deformed, to the deaf, to the dumb, to the blind, to those who are child-like in mind, to those with whom the goddess Psyche is for the moment unkind—to all of these unfortunate folks—their great and good mother, North Carolina, chants a sweet song. To many of them the State brings healing, and to all of them she brings comfort, and her instructions are often simpler, more appealing, and less dangerous than washing seven times in the Jordan—a dirty, turbulent, treacherous stream, so travelers tell me.

But I must not afford you reasons for a still greater degree of self-satisfaction, too much of which I hear you already have.

If I should presume to speak to you about any phase of the problem of feeble-mindedness it is proper that I should first attempt to offer you some idea of my conception of the meaning of the term. May I not say that it represents a departure from the so-called mental normal, and that the degree of deviation may be so slight as to make it difficult of detection, or the departure may be so extreme as to imply the absence of practically all mentality. In an individual whose physical years are those of manhood or of womanhood, but whose mental endowment is that of a child, the condition is feeble-mindedness. Those unfortunate folks who may be grown up physically equal to their years, but who are unable because of mental weakness to foresee and to deliberate about the consequence to themselves and to others of different kinds of behavior, are mentally below the normal level of intelligence. Somewhat arbitrarily it has been

agreed to call idiots those whose mentality is not greater than that of the babe of two years; the imbecile is the adult with the mind of a child no older than seven years; the moron may be near to the mental normal, but his mentality cannot be developed beyond that of the child of twelve years.

May I now go a step further and declare that even those mentally-dwarfed unfortunates who may be able to understand with some degree of clearness, and yet be unwilling or unable to restrain themselves are likewise feeble in mind?

Out of these manifestations of inherent mental unsoundness spring much of our modern-day crime and other forms of immorality. Inability to understand the reasons for law and the necessity for self-restraint manifests itself frequently in violations of established customs; inability to subject one's self to necessary restraint and self-control is another exhibition of mental feebleness. Through the mechanism of the mind all adjustments in life are brought about; continued or frequently repeated mal-adjustment can imply nothing else than disorder of the mental mechanism. And may I not call upon you to testify that out of a sound mind spring good morals, and that immorality of every sort whatsoever grows most luxuriantly only out of unsound mental soil?

About this can you be troubled by any doubt? Let me say to you that in the penitentiary in the State of Virginia in which I am permitted to work, more than 25% of the prisoners are feeble-minded. In the State Reformatory at Jeffersonville, Indiana, almost 50% of the inmates were found to be mentally far below the normal level. Dr. Fernald, an authority in this phase of medicine, stated that as the result of a thorough investigation, 25% of the prisoners in the Massachusetts State Reformatory were found to be feeble in mind. In the State Industrial School for girls at Lancaster, Pennsylvania, 30% were found to be mentally feeble. But inherent mental inadequacy is found not always in prison.

In an investigation of 600 young women in Chicago "whose feet go down to death, whose steps take hold on hell" it was found that they were selling their souls because they were mentally unable to live by their intellects.

Fortunately or unfortunately, however, only a very small percentage of the nation's feeble-minded have come under restraint and control in institutions. It has been estimated that about 3% of all school children are mentally subnormal. What does that mean? It means, for one thing, that they can never be normally educated. It means that money and time and effort will be wasted in attempting to drive into them the sort of training designed for normal children. It means the useless expenditure in the nation of millions of dollars every year in trying to teach these children what they did not learn last year, cannot learn this year, and will not learn next year, or any other year because of inherent mental incapacity. May I tarry for a moment to emphasize by reiteration the statement that the problem revolves around mental incapacity?

How many individuals are there in the State of North Carolina who are below the standard of intelligence normal for their physical ages? Might I say 1000 without causing you to shudder, or 10,000 without being thought too cruel a judge of mine own people whom I love? Statistics prepared under the supervision of the Surgeon-General of the United States Army will tell you that 21 out of every 1,000 of your young men drafted into the army during the late great war were feeble-minded, and that about 18 out of the 21 had to be sent back home as unfit for military service. What a stupendous and an appalling thing is this matter of mental inadequacy! As a result of rejection from the United States Army during the World War of 69,000 men because of mental abnormality of various kinds, one-third of this number—more than 20,000—were found to be mentally under-developed, and to such a degree as to make it impossible for them to be trained into soldiers. Instead of becoming defenders of the nation they became wards of the states.

The condition must be as old as human history. Did not the repulsively ugly body of Thersites, as he raved and snarled in the Grecian army before ancient Troy, house a distorted and a perverted mind? Were not the fools of Shakespeare ancient examples of modern morons? What explanation other than mental and moral under-development can you give of the recent murder of the aged rural mail carrier by the sixteen-year-old boy in your own State? If the mighty King knew not that the physical beauty of his son Absalom housed a twisted and a feeble mind which made him disobedient and rebellious, how shall the prosecuting attorney and the jury and the judge and the governor know the mentally and the morally sound from the unsound? How long will your great State continue to prosecute little children? How long will it continue to keep them confined in prison? How long will it continue to send them to the road with pick and shovel? When will it cease to send through their tabernacles of flesh the deadly current till their spirits flee away?

Let me hasten to say that I do not believe that all crime is the product either of insanity or of feeble-mindedness. But out of mental unsoundness springs badness of all forms which grows like the ancient gourd.

Whence comes this mental unsoundness, this lack of development, this appalling inequality that Jefferson apparently knew not of when he penned the immortal declaration? Does any man, medical or layman, within the sound of my voice, believe for any fraction of a second that all men are created either free or equal? If so, let him go into your schools; let him go to the reports of the military commanders of your sons in the late war; let him interview fathers and mothers. If he continue to nourish such a delusion let him go to your splendid school for the mentally subnormal at Kinston and gaze there into the faces of those little children. Equality? Freedom? How can either exist except as the result of a sound mind and an accompanying sound character?

In these mental children do you wonder about the cause or the causes of their situation? Do you ask: "Whose was the hand that slanted back their brows?" Is the condition born with the child? Is it an affliction imposed during birth? Is it the result of disease or disaster in childhood? Has it occurred to you that those of us who think of ourselves as sufficiently normal, both to control ourselves and others, may be somewhat responsible for the wide disparity in behavior? Do we not know that mental normality is a relative term? Is it difficult for us to understand that the continuous multiplication of laws may make a comfortably-adjusted existence impossible for all except those as wise as Solomon and as obedient as Socrates? Regulartory and inhibitory laws are so many that these feeble-minded folks cannot live outside of an institution without becoming law-breakers. Comfortable adjustment in life depends almost as much upon the nature of the environment as upon the condition of the individual. I cannot walk upon the street or the highway without violating the traffic regulations; I cannot take to the woods to fish, to hunt, or to pluck a violet, without being arrested for trespassing; if I seek to cut in my radio on a distant station in order that I may enjoy a sermon, lo, I am become a pirate of the air; if I would solace my body with food and with drink, I should make personal nullification of some sumptuary enactment; if I should freely express my unfavorable opinion of some characterless, reprehensible neighbor I should be dealt with most unkindly. At last, if in despair and disgust, I should lift up my hand against myself and blow out the candle of life, the Law in majesty and solemnity might come and levy a fine upon my dead and helpless body for having divested itself of the vital flame! What a world, my masters! Is it any wonder that poor little weak-minded children know not how to live in safety in all this artificial, man-made, legal maze?

> Oh Thou, who didst with pitfall and with gin
> Beset the road I was to wander in,
> Thou wilt not with predestined evil round
> Enmesh, and then impute my fall to sin!

What are you going to do about this matter? Will you continue to deal with these mental weaklings as if they had good, sound minds and morals? Will you continue to try to give them an education impossible for them? Will you persist in thinking them simply mean, incorrigible, depraved, and send them to prison, to chain gangs, to the great wooden chair? It constitutes, to be sure, as certain a remedy as the sharp-edged axe that fell upon the neck of Sir Walter Raleigh. Will you give them that freedom about which the great Virginian wrote—let them roam the world, mate, marry, beget their kind, thereby make necessary yearly additions to your institution at Kinston, with the result that those of you who are sound in mind and in body must work and sweat "from morn to noon, from noon to dewy eve, a summer's day", in order that the State may care for idiots and imbeciles and morons?

The State of Virginia has just adopted a law which makes it legally possible for a surgeon to perform a slight operation upon either an insane or a feeble-minded person which will make it impossible for that person ever to become a father or a mother. It is a wise law. The breeding of defectives should be stopped. They beget their own kind, and no other kind. It is written that figs cannot be gathered from thistles.

Let me suggest finally that you survey your State, discover and estimate your feeble-minded, look upon them as such, give them such instruction as they can receive, restrain and control those in need of it, and make it physically impossible for them to know parenthood.

May I pray you always to bear in mind that the prisoner at the bar, huge and defiant, may be in mind only as one of your own little children?

The task calls for mighty forces, but your State has aroused from her slumber. She is conscious of her puissance. She is in the humor to lend her mind to the solution of mighty problems. I salute you. The sun has risen, the fog has lifted, the darkness has gone.

We are living, we are dwelling,
In a grand and awful time,
In an age on ages telling
To be living is sublime.

Dr. J. V. McGougan, Fayetteville, President:

When I first thought of the idea of having this symposium, I was wondering how popular it was going to be and was wondering where I would get somebody to take care of it. I did leave North Carolina to get a man to take care of the medical phase of it, but he belongs to us. We just loaned him to Virginia, and I understand that a large percentage of his patients are still coming from North Carolina.

You know, quoting my friend Dr. Cyrus Thompson, I always feel, when I am in the presence of lawyers, that by the grace of God I belong to just a little better profession than theirs. I wondered where we would get somebody to take care of the legal end of this subject. The profession came to my rescue quickly and said, "If you want to get the best man in North Carolina, get the man who will address you tonight." He has been noted for being one of the most severe prosecutors that the State has ever had, yet I have been told that often after prosecuting this class of unfortunates to the limit he wept and said, "I wonder if I have done the right thing." I take great pleasure in presenting to you the Honorable J. C. B. Ehringhouse, of Elizabeth City, who will now address us.

THE LEGAL ASPECT OF MEDICAL DEFECTIVES.

Hon. J. C. B. Ehringhouse, Elizabeth City

I am very much obliged to my good friend, the President of this Society, for the gracious but undeserved way in which he has

presented me to you. If he feels the slightest degree of embarrassment in sitting here in the presence of one lone lawyer in this assemblage of doctors, I wonder just how much embarrassment he thinks is my portion in attempting to speak to this company of doctors. I want to say in advance, my good friends, that sandwiched in as I am on this program between the great doctor who has preceded me and the great doctor and statesman whose address is the main feature of the evening and who will follow me, I think I am the man who is entitled to feel something of embarrassment. I am perfectly frank when I say to you that I could not have persuaded myself to accept the invitation if it had not been for a really substantial interest in this class of our people with whom this symposium concerns itself. I do not think my good friend the Doctor's informant was exactly accurate in his statement that I had prosecuted to the limit and then shed tears, but I can say to you in all sincerity that in a rather active career at prosecution covering a period of twelve years I never found myself taking the slightest pleasure in any man's conviction and I never found myself unconcerned at the possible results to one who came within the toils of the law and whose mind, it was suggested to me, was lacking in the full development to which every man aspires. And it is because of my interest in that class of our citizenship that I consented to come here tonight and speak to you, if you please, not as a lawyer, not as one who is somewhat given to speaking, as they say of us lawyers, but as one who loves his State and all her people and who wishes to talk to you as a practical man of something of practical measures which suggest themselves out of the experience which I have had and which I trust may be worth something to us in dealing with this problem.

The invitation to address you, by way of suggestion of my subject, asked the question "What shall *we* do with our unfortunate mental defectives?" by which your President tells me he means "weaklings or people of mental deficiency, drug addicts and degenerates in general."

Please observe that the question is addressed by a Doctor to a Lawyer and by way of preface to such answer as I shall make I venture to suggest that it is important that we understand clearly who is meant by the "we," for the difference in our point of view, that is yours and mine, may account for much of misunderstanding.

Your function as medical man in society is the prevention, alleviation, or cure, if possible, of this as of other ailments,—essentially a ministration *to* the *individual*,—while ours, working through the courts, is the protection of society *against* the *individual*. Your primary concern is the individual himself—the welfare of society being secondary only,—with us on the other hand, the rights of society to protection are paramount, and, in case of conflict, it is imperative that those of the individual be subordinated and if necessary submerged. Again your concern is with the individual affected rather than the manifestations of his disorder which you regard as symptomatic merely,—while ours is entirely with these manifestations or symptoms, when they assume the form of encroachments

upon the rights and welfare of others. And lastly your labors are directed towards the persistence and preservation of the individual, even at the risk of harm to society in general, while with us, of necessity, the restoration of the unfortunate can be considered only after full and adequate measures have been taken to protect society against him. It is well to bear in mind the difference in viewpoint because it may serve to explain what appears to you as the harshness of the law in exacting any degree of punishment where normal mentality is lacking.

Now the question naturally arises is there not some way in which society can be afforded its proper meed of protection and at the same time the full opportunity be given the individual for restoration to society—can we not safeguard others without punishing him, and in so doing are we not protecting society. "There's the rub"—the problem—the solution of which I assure you concerns my profession as well as yours, for the law and its administrators desire truly to be just to the unfortunate.

You understand, of course, that in the case of absolute mental deficiency there is before the law absolute immunity from punishment. The insane criminal is not responsible for any act committed while insane and as the law at present exists cannot even be tried for the unlawful act of a sane moment until reason sufficient to plead and conduct his defense be restored. With these we are not concerned in this paper.

But what of that body whose afflictions does not amount to absolute insanity—that vast number, some fifty thousand in North Carolina, we are reliably informed—who may be classified as merely mental defectives?

So long as these unfortunates give no criminal manifestations of their disorder nor by reason of their deficiency fail to restrain their unlawful appetites and propensities, we simply pity them, you doctors go about your work of ministering to them, and the State makes inadequate provision for the care of certain classes of them in the Caswell Training School at Kinston.

But when they step over the line and indulge these tendencies, then outraged society calls and calls vehemently on the courts for protection and punishment and here arises the question of responsibility.

You doctors are accustomed to think of feeble-mindedness not as a distinct entity but as a departure from the normal,—as an absence, in greater or less degree, of that mentality which is considered standard, just as darkness is most properly definable as an absence of light. I borrow the definition and illustration from one of your distinguished company and accept it for purposes of this discussion. I do not think it applies to those cases of drug or alcoholic addiction referred to by your President and I venture this opinion in defiance perhaps of the medical view, because the law rightly makes a difference between an inherent and a voluntarily assumed incapacity to control.

Drunkenness has never been recognized as an excuse for crime except only when carried to the point of incapacity to form an intent which is a necessary ingredient of the crime charged. The law regards it ordinarily as rather an aggravation and justly so because he who deliberately and voluntarily makes of himself a menace to society forfeits his claim to grace at the hands of the society he has offended.

Of course, when by long indulgence one has so deadened the powers of resistance as to make his condition chronic and to render his mental capacities dulled and degenerated to the point of incapacity, he is treated as other mental deficients, the law regarding the condition—that is the effect—rather than the cause.

Now you will concede, I am sure, that the Criminal Law would be impossible of administration unless some *fixed and pre-determined* standard of mental responsibility is adopted. A variable gauge would work an absurdity. The doctrine of qualified or partial responsibility would be difficult if not impossible of practical application in the courts, and would inevitably work to the breaking down of every effort towards correction. So the courts have drawn the line between responsibility and irresponsibility with clearness and a manifest consideration of the humanities involved. I quote the language of an able Judge:

"The law does not recognize any moral power compelling one to do what *he knows* is wrong. 'To know the right and still the wrong pursue' proceeds from a perverse will brought about by the seductions of the evil one, but which, nevertheless, with the aids that lie within our reach, as we are taught to believe, may be resisted and overcome; otherwise it would not seem to be consistent with the principles of justice to punish any malefactor. There are many appetites and passions which by long indulgence acquire a mastery over men more or less strong. Some persons, indeed, deeming themselves incapable of exerting strength of will sufficient to arrest their rule, speak of them as irresistible, and impotently continue under their dominion; but the law is far from excusing criminal acts committed under the impulse of such passions. To excuse one from criminal responsibility the mind must, in the language of the judge below, be insane. The accused should be in such a state from mental disease as not to know the nature and quality of the act he was doing, or, if he did know it, that he did not know he was doing what was wrong, and this should be clearly established. This test, a knowledge of right and wrong, has long been resorted to as a general criterion for deciding upon legal accountability, and, with a restricted application to the act then about to be committed, is approved by the highest authorities."

Now it will not do to say that this is harsh. By the rule of your own definition its fairness is manifest. The feeble-minded adult possessing the capacity to differentiate between right and wrong may properly be contrasted with the normal child. Both minds are *under developed.* And if *all* punishment and all efforts at punishments should be abandoned in the one case then all parental correction comes likewise under condemnation. Fear of repeated punishment—fear

of suffering a punishment inflicted in like cases on others—is universally recognized as a means of correction and restraint. It is the method whereby even the lower animals are trained to apparently intelligent action; it is the legitimate and sanctioned method of child discipline, even the Sacred Book sounding the warning that to spare the rod may spoil the child; and last, but by no means least, it is a method of restraint employed in certain instances by some of the highest medical authorities, I'm told, in cases of mental incompetency.

To punish the small child with as much severity—to hold him to as strict accountability as one of more maturity would, of course, be unjust and in the case of mental deficients is equally so. So the law has weakly endeavored to be merciful and just by providing a wide discretion in every sort of crime under which a just Judge may in large measure take cognizance of the partial incapacity and temper his judgment accordingly. That mistakes have been and are made is fully conceded but let us remember that this is true of every human institution.

This then is the standard of responsibility—the *capax doli*—a "knowledge of good and evil," the power to discern between right and wrong and they who in the language of the poet "know the right and still the wrong pursue" are criminals.

Now can you medical men improve on this? If so, which of you shall fix the standard? Is mental normality the equivalent of average mentality? and if so who shall say what is the average? In seriousness I ask you if you discard our criterion can you agree among yourselves on a substitute? Am I not right in suggesting that there is eminent medical authority for the statement that a large proportion of us are morons, and would not the abandonment of this fixed rule and the substitution of mere feeble-mindedness as a bar to any sort of *punishment* make of our administration of the law a mockery and an endless search for the answer to the famous query "Who's looney now?"

I am not laboring under the delusion that the law is sufficient or even entirely just. I would not, however, have you think it lacking wholly in humanity or its administrative officers insensible of the right of the individual to a chance. I grant you that some method of punishing such unfortunates other than the usual one should be provided in cases of low mentality for I, too, regard it as brutal and inhuman to sentence either physical or mental children to the roads or prison. I can assure you, however, that the problem is one of daily concern to every conscientious judge and solicitor and in the hope that co-operative effort may lead to helpful results, I would acquaint you with some of the difficulties which it presents to us.

As previously suggested inadequate provision has already been made for certain classes of our feeble-minded at Caswell Training School. Entrants are by statute limited, however, to minors and adult females only between the ages of 21 and 30. My information is that there is insufficient accommodation for even this limited class and there is no provision in the law for committment of persons charged with crime. The Statute C. S. S. 5895 does, however, pro-

vide authority in this Institution "to disseminate knowledge concerning the extent, nature and menace of mental deficiency; to suggest and initiate methods for its control, reduction and ultimate eradication from our people; and to maintain an extension bureau for instructing the public in the care of the mental defectives who remain in their homes and for the after-care of discharged inmates of the institution; to create and maintain a psychological clinic for the study and observation of mental defectives charged with crime, and to give expert advice in all cases of mental defect."

The courts likewise have been prone to give indulgence to such delinquents and the device of "hiring out" has been frequently indulged, in an effort to give opportunity for correction. Merciful judges too have lent willing ears to pleas of feeble-mindedness and in dealing out punishment have leaned towards the minimum of punishment as the condition of incapacity apparently approached the absolute.

But these are inadequate and unsatisfactory methods of dealing with the trouble. Let me direct your attention also to a few other difficulties which the courts encounter.

First and most important. The necessity to guard against imposition.

The natural and, under proper control, laudable inclination to sympathize with the man in trouble and even more so to help out his innocent kinsfolk makes us all too willing to lend an ear to anything which may afford an excuse or a means of escape from punishment. Too often sympathy rather than reason may prompt a suggestion by inexperienced doctors, as well as lawyers and laymen, of probable mental deficiency when such suggestion had never occurred before the unfortunate gave leash to his criminal inclinations. This is more and more pronounced with the rise in the scale of prominence or influence in the community of the subject or his family. Recalling this, you must agree with me that we cannot afford in slight cases of mental abnormality, possessing yet the knowledge of right from wrong, to have this work absolution from punishment. The spectacle of defendants acquitted of serious offenses on the ground of insanity, with early discharge thereafter from the asylums of our state, is all too frequent. What would it be should the rule of responsibility be further relaxed so as to include the mere sub-normal. I am sure you know that no reflection is intended by me upon your great profession by this statement. I mean merely to point you to the common experience that you as well as we are subject to imposition and that the welfare of the whole of our law-abiding people demand that both your profession and mine protect against it. To do less is to invite chaos in the administration of the criminal law and to bring both your profession and mine into well merited disrepute.

(2) The difficulty of ascertaining the true mental condition of the prisoner before trial and by a competent tribunal. The suggestion is made that this should be submitted to some board of competent medical and lay investigators in advance of trial who

would report to the court. When you recall the fact that the Superior Courts are necessarily held in each of the one hundred counties in our state, and further that these questions are arising constantly in each and all of them as well as in the countless Recorders, and Municipal Courts, the impossibility of providing in each county such a board is self evident. It is sufficient to inquire where would we get the one hundred experts necessary. And the expedient of sending each suspect to some central point for examination by a general board before trial would be equally impractical and intolerably expensive.

The plan of having an expert mental specialist to ride each Judicial District with the Judge and the provision of proper legal machinery to make his services available at all times in the district to which he is attached has been suggested. But consider even under such an arrangement since there are twenty Judicial Districts, twenty such experts would be required.

(3) And one of the greatest difficulties is to overcome the reluctance on the part of the families of such unfortunates to admit the defect and seek the welfare of the patient through restraint and treatment in proper institutions *before an outbreak.* In this connection it is well to note a certain reluctance too on the part of the medical men to make suggestion in proper cases. This must be overcome. It is better for the patient and the community to be embarrassed by public suggestion of mental subnormality than to permit it to smoulder until an outbreak and then be faced with the added embarrassment of a criminal charge.

In the spirit of practical suggestion may I submit for your consideration the following recommendations:

(a) An intensive educational campaign under the auspices of the State Board of Health or the authorities of the Caswell Training School, proper financial provision being made by the legislature. This campaign should be directed particularly towards preventive measures.

(b) The enactment in to law of such preventive measures as your best learning and experience may suggest. In this connection I recall the so-called Bellamy Law governing the issuance of marriage licenses and venture to suggest that it should be enforced in its proper spirit or repealed.

(c) Sufficient legislative appropriation for the adequate care of all proper subjects either in the Training School at Kinston or in other institutions to be provided and for the full utilization of the powers conferred particularly in Section 5895.

(d) Legislative authority for committment of any citizen to such institutions in proper cases and under proper safeguards either before or after alleged violation of the criminal law.

(e) Authority in the courts to commit to such institutions in proper cases upon conviction of criminal offense with execution of sentence deferred pending confinement. This would eliminate the possibility of escape from punishment by reason of such plea and

the subsequent discharge from institutions on ground of recovery or finding by institution's experts that the suggestion was incorrect.

(f) Provision for some form of humane punishment in proper cases in connection with work of restoration or cure or after recovery if this should be effected. This also to avoid imposition on the courts and the utilization of such suggestions as a means to escape punishment.

(g) Provision of convict camps or work in connection with or near by such institutions for those who upon examination by medical experts at the institution are found fit to undergo such punishment.

(h) Power in the State Prison or convict force authorities upon suggestion of prison or county physicians, after conviction and sentence, to transfer *any prisoner* to such institution for observation and treatment and for service in camps so provided or in original place of confinement if upon investigation the suggestion appears unwarranted.

If the suggestion is made by prisoner or his family the expense of carrying to and from institution, if same is not well founded, should be borne by them, bond being given to protect the state in the first instance. If they are unable to give bond, then the period of penal service should be worked out in the convict camp or other penal labor attached to the institution.

(i) Legislative prohibition of all testimony in criminal trials involving mental conditions except such as is based on actual observation and examination of the defendant himself and absolute prohibition of the so-called hypothetical form of questioning.

I am not wedded to these suggestions. They are imperfect in many ways. I merely trust they may be the basis in part of a real constructive plan for the solution of our problem. If they contribute in slightest measure to the cause I am content. The work is worthy of the best thought and the co-operative effort of both professions.

Dr. McGougan, President:

I am sure, ladies and gentlemen, you will all agree with me when I tell you my opinion is that this symposium has not been in vain.

We are exceedingly fortunate in having with us tonight the gentleman who will now address us. It is my great pleasure to ask Dr. McBrayer, our secretary, to present now the speaker of the evening.

Dr. L. B. McBrayer, Secretary-Treasurer:

In the recent history of our country there have been two men that could say enough in eighteen minutes to make the world sit up and take notice. In presenting one of these gentlemen to a North Carolina audience a distinguished North Carolinian required one and a half hours' time. We hope to get along better than that this evening. One of these men has been President of the United States; the other in all probability will be. One of these men has gone to a

well earned reward; the other continues to carry on and will speak to us this evening. Our distinguished Attorney General, Judge Manning, a short time ago journeyed to Kings Mountain to hear one of these men speak. He was so much impressed with what the speaker said in the short time of eighteen minutes and the way he said it that he testified publicly, on his return, to the fact that he was willing to turn the country over to the doctors. In that connection I am reminded that when the late James G. Blaine was being mentioned prominently as the head of the republican ticket for president a friend adverted to the fact and Mr. Blaine replied: "They might do a great deal worse, and I expect they will." However, as a start in that direction our people—a great many of our people—seem minded to make a doctor President of the United States. It gives me great pleasure to present to you that doctor, who will now address you. I present Dr. Royal S. Copeland, United States Senator from New York.

ADDRESS

Royal S. Copeland, United States Senator
New York City

Mr. President, Mr. Chairman, Colleagues, Ladies and Gentlemen:

We have in New York a very popular Governor who is known to all of his friends as "Al" Smith. Soon after he was elected he went down to Sing Sing to visit our State's Prison. After being shown the buildings by the warden the Governor was asked to speak to the inmates. He was embarrassed, for he had never spoken to prisoners before and did not know quite how to begin. His first attempt was: "My fellow citizens." Then he remembered that when one goes to State prison he is not a citizen any longer. Then he said, "My fellow convicts." That did not sound just right, so "Al" said, "Well, anyhow, I am glad to see so many of you here!"

Tonight I am glad to see so many here. I am glad to be in North Carolina. I am being entertained over at the Mansion, although the Governor is not there. But I forgive him, because he is away on an important errand. I want at this time to extend the thanks of Mrs. Copeland and myself to Miss Morrison and to the Secretary of State and his wife for the entertainment they have given us.

I also want to take this opportunity to congratulate you upon the great reputation of your State in the National Congress. In Senator Simmons you have the greatest tariff expert in that body. If he is not attending the convention this week it is because he is needed there just now. If the tax reduction bill passes it will not be the Mellon bill but a much better bill written by Senator Simmons. Then we have the other senator from this State, Senator Overman, one of the useful members of that great body.

I am mindful of the fact, too, that we are in a city where lives a man who served usefully and honestly as Secretary of the Navy, Mr. Josephus Daniels. It is a significant thing—and you know it is only in North Carolina that at a general gathering one can make

a semi-political speech—it is a significant thing that the scandals which have soiled many republican administrations did not touch Mr. Wilson's administration, and that scandal did not touch Mr. Daniels.

Then, as a doctor, I want to speak of the splendid profession of this State, a group which is conspicuous everywhere for its high quality of service.

I was much interested in what our attorney said tonight. If we have to have a lot of lawyers in public life, I want his kind, but you know I sometimes think—and he will forgive me if I say this—that we have too many lawyers in public life.

Out of the ninety-six members of the Senate eigthy-two are lawyers, and that is the reason why, when you read any measure passed by Congress—for instance, the tariff law—every third line says "provided". Wherever you get to that word "provided" in a law it shows there was a lawyer at work on the bill.

Once there was a party of six persons cast away on a desert island. They were worse off than Robinson Crusoe, because there was no ship in the offing and it looked as if they might starve to death. But one of the party happened to find in his pocket a real estate lease written by a lawyer. In that they found so many *provisions* that they were able to live for six months!

I remember about the Irishman who landed at Castle Garden in the city of New York while they were having a torchlight procession. Everybody was hurrahing for somebody, and the Irishman got enthusiastic and shouted "Hurrah for Ireland!" Some irreverent man said, "Hurrah for hell!" The Irishman replied, "That's right; every man for his own country!" So tonight you will forgive me if I hurrah for the doctor.

The difference between the doctor and the lawyer in dealing with conditions such as we have heard discussed tonight is that the lawyer deals with the effect while the doctor seeks to find the ultimate cause. The lawyer deals with the symptoms while the doctor seeks the essential pathology. When discussing drug addiction or drunkenness or feeble-mindedness or insanity, we do not deal with those conditions as we should until we go to the root of the trouble.

Let us speak for a moment of drug addiction.

It so happened that during my term as Health Commissioner, one day in April, 1919, the Federal authorities went into my city of New York and arrested ten doctors and that many druggists, men—I say men, but that is not the word—reprobates, rascals, I should say. I don't think you can say in polite society quite what you would like to say of those particular individuals, for they were not practicing medicine or pharmacy, they were simply writing prescriptions for those poor addicts.

When they were arrested I found on my hands next morning ten thousand of those addicts. When we came to investigate conditions we found in our city a hundred thousand or maybe more drug addicts. And may I say that the total number of addicts made

addicts by the medical profession is almost nil? Addiction is a social condition and not a condition which can be traced back to the medical profession.

But what is the use of dealing with those poor addicts until we go to the source of the evil, until we go to India and Persia and limit the growth of the poppy and in that way limit the amount of opium which may be smuggled into a country? We can not deal with it in any other way. In the same way we must deal with feeble-mindedness and with insanity, and so with the social diseases. We must go to the source, to the root of the evil, to wipe out every such cursed thing.

I must leave that subject, but it is a thing of such vital importance that the legal profession and the medical profession must work together to solve these great problems. We are upon common ground, I am sure, in our desire to wipe out the essential causes of crime and of diseases that produce crime.

At one time the Commissioner of Patents proposed that the Bureau of Patents be abolished because, he said, everything has been invented that the mind of man can conceive. I suppose I am the only person in this room who can remember back fifty years! I can remember the invention of the telephone, of the electric light, the automobile. You remember at first they were not called automobiles; they were called "horseless carriages." Think of it, the radio, the telephone, the wireless, the tractor—think of the inventions of the last fifty years!

Now look forward fifty years, and what are the inventions and what are the changes which are to take place?

I think about the increase of population during the next fifty years. In our city of New York 137,000 babies are born every year. A baby is such a tiny thing that it seems insignificant—unless it is your baby—but put 137,000 babies together, shoulder to shoulder, and think how far they will reach—twenty-two miles. With the additions from outside we add one hundred thousand to our city every year. A million every ten years. We may expect the population of New York City to be doubled in fifty years, and in this State, in this country, the same growth may be expected. Fifty years from now our country will have a population of two hundred and fifty millions.

How are you going to house such a population as that? In one square mile in my city we have a population of five hundred thousands—half a million in one square mile! There is nothing like that in any other place in the world. In hundreds of those homes the people live in inside rooms, without sunlight and without ventilation. Can you doubt that crime will develop under such conditions? The surest way in the world to make a good citizen of a man is to put him in a decent home. And every baby in the United States has a right to be born in a decent place. That is the condition we should look forward to during these next fifty years.

I called together during the war fifty bankers and presidents of trust companies and presidents of insurance companies—great lenders

of money. I did that for two reasons. In the first place, I was born, as Mark Twain says, in a town where there was not enough money to make it a subject of conversation, and for once I wanted to associate with men of millions. They represented billions of dollars, but they looked just like you. I told these men what it would mean to New York to put 75,000 families in homes of their own, to anchor the people to the soil. You know when a man is anchored to the soil he never becomes an anarchist, but becomes interested in good government and becomes a good citizen. So one of the problems, as I see it, for the next fifty years, is the problem of decent housing for the people.

There is not any one who knows so well as the doctor how necessary it is for people to be decently housed. A baby born in a home of four rooms has four times the chance to live that a baby has who is born in a home of one room. If we seek the highest welfare of our country we shall strive during the next fifty years to give all our people a decent place to live.

After you have the population housed, how are you going to feed them? Every doctor here knows that you can not have a good natured citizen unless he is well fed.

It may seem strange if I talk to a group like this about the farmer. But the farmer is not happy; he can not sell his surplus. Every citizen in North Carolina is interested in this problem, because you know under normal conditions we send abroad half of our cotton and about one-third of our meat and wheat. But it is not going abroad now. Why isn't it?

A few months ago I was in Poland, going up toward the Russian border. The Government knew I was coming and assigned a cabinet officer to look after me. They gave me a private car to ride in, but it was not like that private car of Harry Sinclair's. It was more like a caboose on a freight train. To make me feel more at home, they put a Ford car on the train. Then they gave me a crew to run the train, a chauffeur and a doctor.

At this point the cabinet officer got rather red in the face and said the Government would furnish the food and cook it, but it could not pay for it. I said, "Well, I will pay for the food for the whole party." At the end of a four day trip I paid the retinue of servants so liberally that they bowed to the floor, and paid for the food for the whole crowd, and the whole amount was $3.50 in American money.

The point is, you see, money is so depreciated in value over there that they can not buy our stuff, can not buy our wheat and meat and cotton. It seems to me the administration at Washington ought to take some steps to rehabilitate Europe, so that the streams of commerce may be reopened and trade resumed. Why would it not be a good idea to have sit down around a table not the doctors, not the lawyers, not the statesmen, not the politicians, but let the business men of the world sit down around a table and work out a plan for the rehabilitation of the world and for the re-establishment of trade? That, it seems to me, is a thing that must be done to save these farmers from bankruptcy.

Do you know what has happened up in the Northwest, where they can not sell their wheat? Up there four hundred banks have failed in the last few weeks. That is what is going on. We can not feed the people unless the food is produced, and this world needs food. We can not raise too much to supply it.

Now, suppose we go on during the next fifty years and have this great increase of population and decently house them and feed them. What reason have we to suppose that we shall be free from epidemics? The most popular belief that a citizen has is that epidemics are purely historical. You know we read about the great black plague in Europe, when two hundred thousand people died, but we do not have to go back two hundred years. In 1918 we had the epidemic of influenza. I sat in my office for six weeks and watched the death rate go up and up and up. In six weeks in my city thirty-five thousand died of influenza. In those weeks in this world more people died of influenza than died in all the battles in all the wars of all history. Why do we flatter ourselves that we are to be free from epidemic diseases?

I want to tell you just a little about some of these conditions because, whether you are physicians or laymen, you have a personal interest in them.

I went on that trip up to the Russian border as far as the train would take us, then unloaded the flivver and went overland. In the great war seven hostile armies passed through Poland. Then, after the war was over, the Poles had three years of war with the Russian Bolsheviks. When they went down out of Eastern Poland they destroyed every building, took away the flocks and herds, and carried half a million Poles into captivity.

I thought I knew the effects of war, until I saw the eastern front. You see nothing there but the torn-up ground, trenches and ruined buildings. I saw in one dugout the grandparents, the parents, a family of children and a flock of chickens, living there for two years.

I went almost up to Moscow into what was the heart of old Russia. It was a great city before the war, but now there is nothing except a few wooden shacks surrounded by barbed wire. To this place last year half a million refugees came back. Thirteen hundred were on the first train that came in after I arrived. These thirteen hundred people, regardless of sex or family relationships, had been locked in cattle cars for eight months. One train started out with twenty-six hundred, but on the way two thousand died and it arrived with six hundred. They were not peasants; many of them were people of refinement. All of them were ragged and full of vermin and diseased.

When I saw the conditions and realized that in three of the seven points through which these refugees are coming there are no hospitals and these infested and infected persons pass through to mingle with the civil population, I realized the danger to the world. I went down to Geneva, to the League of Nations, where I saw the work of Professor Tarasovitch of Moscow, an eminent member of our profession. He reported that in the last five years there had been forty-five million cases of typhus in Russia, and nine million had died.

Don't you think it is a good thing to have a few doctors in the public service to learn about these things? You know the indifference of the public to such matters is amazing. A few years ago a ship came into New York harbor from which the United States authorities sent to a hospital four cases of pneumonia. The hospital officials became disturbed about this pneumonia, and I sent a diagnostician. Not one of the patients had pneumonia, but three had well developed cases of typhus. The passengers were ready to disembark, but I sent them back to quarantine. Nineteen cases of typhus were found on the ship, and a number of persons died while the ship was in the harbor. But for the vigilance of the Health Department we might have had a well developed epidemic of typhus in New York City.

Like a lot of thoughtless people, I went down to see Congress about it, but before doing that I called on the Surgeon General. I said, "It is a terrible thing, this matter of having typhus come in; it must be due to a lack of personnel and equipment. What would it cost to put in adequate personnel and equipment. "Half a million dollars," was the reply. I said, "Have you asked Congress for it?" "No, Congress is not interested in the public health." I said, "Well, General, I can hardly credit that. I think I shall go over and see Congress about it." He said, "I wish you would." You can imagine how he said that.

Well, you know how it is when you go into a public office, how they hand you along from one office to another, and if you don't have your overcoat and your lunch along you will starve or freeze to death before you find the right place. Finally I got into the hands of a congressman who has now retired from Congress, for his country's good.

He said, "Well, Doctor, what you want to do is to beautify New York harbor." I said, "No, what I want to do is to save your State." He said, "What, do you mean to say that Iowa is in danger of typhus?" I said, "Yes, indeed I do." He said, "Well, that is different," and they appropriated the money at once. What we need in Congress is men who will see the whole country and not just one portion of it; we need more men who will take an interest in humanity.

You know, our profession is the only profession in which the members are always working to put themselves out of business. We shall have no business at all pretty soon. It may get to the point where doctors will be arrested every month for vagrancy, having no visible means of support.

I believe I am the only doctor in the United States who has his own cemetery. Out on my farm in New York is a cemetery where, in the language of the natives, forty head are buried. When I am in a sad and reminiscent mood I go out to my cemetery and read the inscriptions on the tombstones. Do you know that, with two exceptions, all these people died under the age of fifty? Because Methuselah lived to be over nine hundred years old, the popular

tradition is that people used to live to a ripe old age. But they didn't live long; it only seemed long! They went into the house in the fall, nailed down the windows, sewed themselves into their underclothes, and did not take a bath until the ice went out of the river in the spring, so they died young. But in the last fifty years we have added eleven years to the span of life. Go back only thirty years in New York City, and out of every thousand babies born two hundred and forty-three died before they were a year old. Now only seventy babies die out of every thousand. That has been done by the education given by physicians and by nurses to the mothers, and by the improvement of the milk supply and of the water supply.

Out in front of the City Hall in New York is a monument dedicated to Civic Virtue. Mayor Hylan says it is "a rough guy armed with a club and standing on two mermaids." That is not a bad description. If I were going to raise a monument to Civic Virtue I would not go to mythology for a subject, but I would have the heroic statue of a man holding aloft a sweet, smiling baby, and I would have the face of that man that of Mr. Nathan Straus, because he is the father of the pasteurization of milk. To my mind Mr. Straus is the greatest benefactor of his generation, and some day I hope we shall erect a monument, a living monument, to him.

Two years ago we had a health exhibition in New York, and I had the pleasure of going through it with Dr. Stephen Smith, a young man of ninety-nine years, who was the first health commissioner. We had some charts showing the contrast between 1872 and 1922—fifty years. In 1872, out of ten thousand of the population, thirty-two died of smallpox. Why, we have had only one death from smallpox in two years, and that case came from South Carolina, if I remember rightly. We do not have any deaths from smallpox because we have learned the value of vaccination.

But I think sometimes we in the medical profession forget the importance of having our neighbors and friends and patrons vaccinated at regular intervals. I happened to be in Glasgow a few years ago when they were having an epidemic of smallpox in Scotland. I took statistics, because I wanted to see what happened, and especially what happened to the children. In one week they had eighty-three cases of smallpox among children under sixteen. Sixty-two of these children had never been vaccinated. Twenty-one had been vaccinated and still had it. Now, you know the opponent of vaccination says, "Aha, it doesn't do any good." But out of the twenty-one who had been vaccinated not one died, and out of the sixty-two children who had not been vaccinated eighteen died. Those are not figures taken out of the dark ages; this happened only two or three years ago.

I think on occasion we ought to renew our appeal to the public to be vaccinated. I came back from that trip with the idea that there should be general vaccination. I was vaccinated before a moving picture machine, with the idea that as health commissioner I ought to do what I asked other people to do. My boy said, "Well, I have never been vaccinated"; my wife said, "I have never been"; and

I found that an office nurse, my assistant, and a maid in the house had not been. Look around in your own household and see if you are carrying out the measures you recommend.

We have gone on and on and on, and the death rate has come down and down and down, and so I think we may as a profession think we have done very well in serving our day and generation. And the beauty of it, my friends, is that our country now leads in all these matters that have to do with health.

I sometimes think we do not quite appreciate our own country as we ought. Sometimes we do not appreciate it until we go to other countries. I remember one time when I was a very young man being on a Rhine steamer, going down that majestic river, passing old feudal castles told of in rhyme and story. But all those things meant nothing to me. I got up on the front of the boat, because that part would get home first. I was homesick. As we turned a bend in the river, I saw a familiar object above one of those restored castles. As the breeze caught it, sure enough it proved to be "Old Glory", the Stars and Stripes. I don't know how it got there, but I thought then, as I do now, that I should like to make a modification of that old Pinafore rhyme, the song of my soul:

"I might have been a Russian,
An Italian or a Prussian,
But in spite of all temptation
To belong to another nation,
I am glad to be an American."

It is our land, and we of our profession are going forward to make it a better land so far as health is concerned, a land safer for the babies, a land free from those degenerative and degenerating diseases that make for decreased longevity. We are doing our part, and I think we should go forward with the determination to do better, not alone in our own particular field, but to make the national health just what it should be. I believe we are going to strive, as a profession, to make this country not the greatest country in the world, because it is that now, but to make it, under God, the greatest country than can be conceived of by the mind of man!

I thank you.

(Adjourned.)

CONJOINT SESSIONS

OF THE

MEDICAL SOCIETY

OF THE

STATE OF NORTH CAROLINA

AND THE

NORTH CAROLINA STATE BOARD OF HEALTH

WEDNESDAY, APRIL 16, 12:00 M.

Dr. J. Howell Way, President State Board of Health:

The time having arrived at which, under statutory enactment by the people of North Carolina, there is held annually a Conjoint Session of the State Board of Health and the State Medical Society, I now call that Conjoint Meeting to order. The first thing in order will be the Report of the Secretary. I present to you our Assistant Secretary, Dr. G. M. Cooper, of Raleigh, who will present the Report.

ANNUAL REPORT OF THE SECRETARY OF THE NORTH CAROLINA STATE BOARD OF HEALTH

CONCENTRATION AND CONSOLIDATION OF PUBLIC HEALTH WORK

Mr. President and Members of the Conjoint Session of the Medical Society of the State of North Carolina and the North Carolina State Board of Health:

In the annual report submitted one year ago the Secretary pointed out specifically the responsibility of the State Medical Society for health work in North Carolina. At that time the Secretary definitely emphasized the fact that the State Board of Health has never inaugurated an important public health policy nor made an important change in an established policy without first submitting what it had in mind to this society. This is a fact, and the published transactions of this society from year to year bear the statement out in every detail. It may be just as clearly stated here that the State Medical Society has never failed to measure up to its responsibility when policies have been proposed to the society by the State Board of Health. It has always carefully considered each proposition on its merits, and its resulting action has always been based on a broad minded conception of duty and the full appreciation of the responsibility the society and its component members owe to the people of North Carolina. Again, the published trans-

actions from year to year bear out the truth of this statement. Previous to fifteen years ago, when the educational work for the establishment in North Carolina of systematic health work which would be founded on fundamental principles conforming to the complexities of modern life was being given first place in the program of the Board, the N. C. State Medical Society, through its intelligent co-operation and its fine organization, wielded a powerful influence. This splendid forward looking vision of the society in rendering aid towards the success of the efforts of the Board has culminated in the results which have been achieved in recent years. Never in the history of the State has it been more essential to the welfare of public health work and to the progress of the medical profession in this State that these two agencies continue to function as a conjoint enterprise. With the tendency everywhere all over the world to tear down and destroy the established order as expressed in government slowly built up, through long centuries of effort, for the purpose of substituting indefinite chaos, it is more necessary than ever that progress be accomplished on a basis of sanity and common sense.

It is evident that public health progress in North Carolina cannot be accomplished any faster as a whole than that represented in the weaker, more backward counties whose actions coincide with the wealthy or indifferent counties which are careless in the matter of public health protection. The State Board of Health a long time ago realized that if public health work was to function in this State on a permanent basis it could do so only through the organized efforts of the people in the individual counties and cities of the State. In the effort to encourage the promotion of such organization in the counties throughout the State the chief efforts of the State Board of Health during the past year have been directed towards a concentration and a consolidation of work already inaugurated through the county health departments co-operating directly with the Board. It is not possible now in a report of this scope to outline any detail of extensive work being carried on by all the individual sub-divisions of the State Board of Health. However some features of the work deserve particular emphasis.

First. On the last day of March there were thirty counties in North Carolina maintaining organized health departments co-operating on a financial basis with the North Carolina State Board of Health. These thirty counties represent more than 40% of the population of the State. In addition to the thirty counties co-ordinating and functioning under this general plan there are three other counties maintaining satisfactory organized health departments on an independent basis, which carries the service to 48% of the State's population. The thirty counties co-operating with the State Board of Health in organized work are as follows:

Beaufort, Bertie, Bladen, Brunswick, Buncombe, Cabarrus, Columbus, Craven, Cumberland, Davidson, Edgecombe, Forsythe, Granville, Halifax, Henderson, Hyde, Lenoir, Mecklenburg, Northampton, Pamlico, Pitt, Robeson, Rowan, Sampson, Surry, Vance, Wake, Wayne, Wilkes, Wilson.

Seven of the above named counties, situated in the eastern part of the State, are co-operating in addition to the general plan of work in a malaria control program which promises the control of that disease in those counties at a not distant date, or at least the reduction of the problem to a minimum of importance.

Thus in the twelve years intervening since January 1, 1912, when there was only one county in North Carolina having a whole time health officer whose services were extended to the rural sections and which was costing $2500 a year, the service has expanded to serve approximately one half the population at present and requires an expenditure of nearly half a million dollars annually, nearly seventy-five thousand dollars of which is contributed by the State Board of Health for strictly local work on a co-operative basis with the counties. A significant fact in connection with these organizations is that the counties with whole time departments are showing greater reduction in their death rate than the State as a whole and may, within the next few years, be expected to pass the low record of the State. Even now the North Carolina death rate of 11.5 represents a reduction in the death rate of the State during the past twelve years of nearly 50%, or a saving in one year now of nearly 20,000 lives. But the most gratifying consideration as a direct result of organized public health efforts in North Carolina during the past three years is the steady reduction in such strikingly preventable diseases as typhoid fever. For the first time in the record of the medical history of North Carolina there were less than 275 deaths from typhoid fever in 1923. The distressingly high death rate from diphtheria and pellagra which occurred in 1922 was also materially reduced the past year, there being almost a 40% reduction in the number of deaths from diphtheria. The 251 deaths from pellagra recorded in 1923 represent a considerable reduction over 1922, in which there were 306 deaths. However the death rate from all three of these preventable diseases is entirely too high, and will require concentrated efforts on the part of the medical profession and all public health workers in North Carolina in order to reduce it to a negligible factor.

Second: During 1923 the work of the State Laboratory of Hygiene showed a general increase in all lines of work.

In the diagnostic division an attempt is made to do all those kinds of examinations which have a bearing on the public health. Tests which belong strictly to the private practice of medicine are not attempted although the distinction is sometimes difficult to determine. The Wassermann blood test still continues to be the most important so far as indicated by the number of specimens examined.

In order to insure an adequate supply for the ever-increasing demands, a general amplification of all facilities for the making and distribution of antitoxins and vaccines has been carried out during the year. In the near future therapeutic doses of tetanus antitoxin will be distributed in addition to the prophylactic doses to which this work has hitherto been limited. It is hoped that the present widespread use of diphtheria toxin-antitoxin mixture will now begin

to appreciably reduce the incidence of diphtheria. There is good ground for the belief that this agent will prove to be as valuable against diphtheria as typhoid vaccine has been in the fight against typhoid fever.

As an illustration of the economy with which the laboratory operations are conducted, it may be stated that all phases of its work are financed on approximately the same sum which it would take to buy the diphtheria antitoxin which is distributed.

Third. The work of the Vital Statistics Department, Epidemiology, and Venereal Disease Control were consolidated during the year, and is now executed from the same division. There has been no change of policy and no matters apart from regular routine undertaken.

Fourth. The Department of Medical Inspection of Schools has been without a director since November 1, 1923; and its affairs have been administered from the Executive Department by the Assistant Secretary. No change of policy has been considered and the program remains the same it has been for several years.

Fifth. The Bureau of Engineering and Inspection has continued to function as usual with only a few slight changes in its program.

On account of the fact that the public is being aroused as never before to the importance from a public health standpoint of milk sanitation, the Board has recently employed in its service a capable man for the purpose of correlating efforts in the various sections of the State leading to the production and distribution of a clean and safe milk supply. This effort, of course, is right now in its initial stage, and it will require some time to evolve an acceptable plan of procedure promising the most satisfactory results to everybody concerned.

Sixth. The work of the Promotion of the Welfare and Hygiene of Maternity and Infancy may be still considered to a great extent in the experimental stage. The only work of the Board during the year which might be said to approach the inauguration of a new policy is in connection with this division of the work. The organization and operation of prenatal and infant conferences, or clinics, as a part of the local maternity and infancy program was instituted during this period. The effort has been made to have these clinics conducted by members of the local medical profession who receive compensation for the time spent in the work through funds obtained from the State Board of Health and the Children's Bureau of the Federal service. It has been hoped that the clinics might be conducted on a permanent basis. Three physicians of obstetric and pediatric training have been employed as field medical supervisors for the purpose of trying to organize and establish the work of the clinics, together with promoting the work of public health nurses employed through the efforts of this division. Primarily these field medical officers are expected to assist the local profession in becoming familiar with the accepted standard methods of carrying on the work of the clinics. There are many difficulties to surmount in the promotion of this program.

Seventh. The plan of establishing district health departments, each district having a district health officer, was instituted as an experiment. The State was divided into five districts, each composed of twenty counties. Beginning January 1, 1924, these divisions were reduced to two, an eastern and a western, the former composed of forty-seven counties and the latter of fifty-three. The officials in charge are designated as Deputy State Health Officers and are direct representatives of the Executive Department. This arrangement is designed to systematize the work of the State Board of Health in the counties and as all official contacts with the counties are made through these two officials, it is hoped that unnecessary duplication of efforts by employes of the Board may be prevented.

Eighth. For several months of the past year the State Health Officer has been engaged in work of a national character. While he has by no means been resting, the scope of his work means a diversion for him. In his case a diversion sorely needed and long overdue; following as it does nearly fifteen years of the closest personal attention and application to every detail of organization and development of the Board's activities, that it would be possible for any man to do. However his absence has made it necessary that the work of the organization as a whole should function for the most part without a directing head, except through what the corporations term a "dummy director."

LEGISLATION

No session of the General Assembly having convened since the last report was submitted one year ago, naturally there has been no question of legislation for immediate consideration. But with a special session of the legislature possible, and with the next regular session only a few months away, there is a possibility that a proposed reorganization of the entire State Board of Health of revolutionary character may receive serious consideration.

In conclusion it may be said that more time and effort, and more money has been spent on strictly educational features than at any time since the entrance of the United States into the World War in 1917, seven years ago. Particular emphasis has been placed on health literature, in a simple effort to teach more elementary hygiene and sanitation. The response from physicians, from individual citizens, and from schools has been much better than anticipated.

THE CHAIRMAN: Gentlemen, the Report of the Secretary of the Board is before you. Any discussion? Any questions in regard to the same are now in order. Gentlemen, as the Chair has on former occasions repeated, this is your Board. This is the Board of Health of the People, of the Profession, of the State of North Carolina. The actual report of what it has been doing is now before you and under discussion, and any question, any criticism, constructive or destructive, that any gentleman wishes to make is now in order.

Dr. W. M. Stone, Dobson: It has only been in recent years that we have had a whole-time Health Officer. Dr. L. L. Williams is our Health Officer in our county, and I want to say that it is very, very gratifying indeed to know the wonderful amount of good that has been done in our section along one line alone; that is, vaccination against typhoid fever. I have been in that locality nearly eighteen years. When I first went to that country they had from eighteen to twenty-five cases of typhoid fever every season. It seemed that back up in that country we had a very fatal form of typhoid fever that was practically beyond control. Prior to a few years ago we had a great many deaths out in that country. Since we have had a whole-time Health Officer I have only had in my practice—I have a territory of from sixteen to thirty miles in various directions around me to the nearest physician—and in that territory that I now cover and have been for eighteen years, during the last three years we have only had one case of typhoid fever, against from twelve to twenty-five cases prior to the work of the Health Officer. I did all that I could to educate those people in how to prevent typhoid fever, and the only case I have had in the last three years is one of a young negro that had never taken the vaccination, so I feel that that one thing alone has greatly paid our county for the amount that has been expended for the health work in Surry County.

Dr. G. T. Sikes, Creedmoor, R. 1: I would like to add a word in regard to the typhoid fever situation in my county. We have never had as much typhoid as they have had in some places. Since we have had the benefit of the typhoid vaccination, which has been, I reckon, eight years since we first instituted it, in my territory I have only seen one case of typhoid fever. Really have not had any in my practice. I haven't seen but two cases, I reckon, now in ten years. We feel like we have almost absolutely dispelled the very dreaded and hateful disease of typhoid fever. We have had improvements in other ways, but the most decided improvement we have had has been the extermination of typhoid fever.

Dr. Wm. L. Dunn, Asheville: I don't think there is much for us to say about this report, except to congratulate ourselves upon having a Board of Health that is doing such a tremendously interesting and important work, and to congratulate our Board of Health on their ability to do such work, and on having men who are doing the high type of work that is being done in the State of North Carolina. I think we should say frankly how proud we are of our State Board of Health. I have been interested in one thing in particular. We are, presumably, in an age of preventive medicine, and an age in which everybody, particularly the younger physician, is interested more in prevention than in the cure of disease. An interesting note that I make upon that is: If that be true—and today I doubt it very seriously—why is it that in a meeting of the Department of Health of the State of North Carolina, the average age of the men who are interested and sitting here is well over fifty years? Why is it in these sessions there is hardly a man of thirty or under? Why is it you

can count on your fingers the number of men of thirty-five and under? I think it is a sad commentary on the status of preventive medicine that we of gray hair and bald heads constitute a great majority of the attendance here at a meeting of a Board which has directed the attention of the whole country to its efforts in that field.

Dr. S. A. Stevens, Monroe: I want to add a word from my county to what has been already said by the other gentlemen. I am glad to say that Union County was one of the first to take advantage of the offer of the Board of Health to vaccinate all the people in the county. We have had that done three times now. I have had only one case of typhoid fever, a year ago, in a family not vaccinated. I mention this to show what good work the State Board of Health is doing.

Dr. H. B. Weaver, Asheville: I would like to say this; I have had some experience in the treatment of typhoid fever in the days gone by. If you will excuse the egotism, I will say that I remember when I had over five hundred cases in Buncombe County. In a little place called Beaver Dam, up near the old Governor Swain place, at one time there appeared an epidemic of forty cases of typhoid fever. That was about the time the fly theory came in vogue, and it was demonstrated to be correct. One soldier came home from the Spanish-American war and a certain doctor pronounced he had flux. From that case thirty or forty cases of typhoid occurred. What I have to say is now, in Buncombe County, last year I think we had only one or two cases of typhoid fever, mainly because vaccination was carried on almost to perfection by our health officer who vaccinated thousands of cases of school children and is continuing it this year, and no doubt it is the result of the very fine and efficient carrying out of instructions of the State Board of Health.

Dr. John A. Ferrell, New York and North Carolina: Mr. Chairman, and Gentlemen: As a former employee of the State Board of Health and as a former member and Secretary of the State Medical Society, I desire the privilege of making a few remarks. The answer to the question of Doctor Dunn is, I think, quite obvious. You are familiar with the methods employed by men in investing their savings in securities. When they invest in Liberty Bonds and other grade "A" securities, they enjoy peace of mind. If they are placed in strong boxes, there is little to cause them anxiety. Occasionally savings are invested in bonds or stocks rated as speculative. The owners of such bonds are constantly concerned with regard to the safety of such securities. They will consult their broker or banker frequently as to the advisability of holding or selling. In North Carolina the medical profession and the tax-payers regard their investment in their health organization as being in a class with the grade "A" securities. In this particular they enjoy peace of mind. They are not alarmed or disturbed with reference to what is going on, and this attitude is reflected, I believe, by the size of the attend-

ance at this session. If the safety of the organization as it now exists should be threatened, a much larger auditorium would be required to accommodate the physicians who would be present.

Some time ago, I understand, a move was under consideration to reorganize certain departments of the State Government, including the State Board of Health, in such a way that the organization and activities might be semi-political in character rather than professional as it now is. When anything of that character is undertaken in North Carolina, it will be time for you to regard the safety of your investment in health service as threatened. You can no longer rest content with the situation. The present State Board of Health is a development and outgrowth of the State Medical Society. Four-ninths of the membership of the State Board of Health is selected by the State Medical Society, and it is responsible largely for the remaining membership, which is appointed by the Governor, because of its influence with the people throughout the state who elect the Governor. I am acquainted with every State Health Officer in the United States and with the machinery by which each is selected. In my judgment no state has a sounder plan than North Carolina for the selection of its public health personnel and for the direction of the state health activities. The backwardness of many states in health matters is clearly due to the instability of the health department; to frequent changes of health officers; to the inability of the health department to attract competent employees because it cannot give assurance of tenure on the basis of efficient service. In North Carolina you have escaped these unwholesome influences. There has been no politics in your health organization. You should oppose any proposal which would permit any Governor to change a majority of the members of the State Board of Health during a single administration. The lesson learned by bitter experience as to the best method of conducting state universities and other public educational institutions should have suggestive value in the field of public health. That the organization you now have is established along sound lines is evidenced by its rapid growth and the leadership among states in the field of public health which your state now enjoys. You have a responsibility for maintaining this leadership, and I know you will discharge it fully.

Dr. Wm. J. McAnally, High Point: Just a few words in regard to the attitude of the general practitioner toward our health organization in North Carolina. We feel tremendously proud of its accomplishments in thinking over what has been done by our State Board, not only in the lessened incidence of typhoid fever but in other diseases it is really inspiring. Take the little town of High Point—as it used to be—now grown to a city of twenty-five thousand. We used to have a great deal more dysentery among three thousand people when I first went there—and I am still a young man—than we have now among twenty-five thousand. We had from ten to fifteen times as much typhoid fever among three thousand as we have now among twenty-five, notwithstanding its marked transitory

population. Typhoid fever is practically unknown, but the benefits don't stop there. Take diphtheria antitoxin and take the tetanus antitoxin, and the rabies immunization and all sorts of things. These are not visionary words, they are real achievements. If persons are not treated they die right now, and die of lockjaw every once in a while. But with the assistance of the State Board of Health we don't have any trouble obtaining a satisfactory milk supply, don't have any trouble keeping the water supply clean. If typhoid fever occurs on the watershed we have assistance right now. We can keep our dairies cleaned up. If you discard the health organization you strike at the very health and progress of the state. Without the eternal, watchful care of the State Board of Health, the material progress and development of the state will stop. That isn't theory at all. I remember being at Mayodan thirty years ago and sixty per cent of the population would be incapacitated from sickness. That is a fact. They had diarrhœa and typhoid, everything else you can think of. It doesn't happen now, and there is only one thing which wrought this change: it was the State Board of Health. Now you can tear it down, and strike at the very life and progress of your state. There isn't any question about that. It isn't because I am a physician that I say these things, but it is because I have sense enough to know what produced the results. When we sit here and hear you make your reports, we would be ungrateful if we didn't let you know we recognize the value of your work. To wait until our friends are dead and then buy flowers for their graves—that is all right, but let us tap a fellow on the shoulder now and let him know what we think of him. We have all kinds of problems. We have quacks in our profession, just as we have cheap, tinsel imitations of this republic. We have medical men who have achieved cheap successes; have all kinds of quacks trying to imitate the skillful, learned, well-equipped medical man. He is simply an imitator, but the achievements of the medical profession and of the State Board of Health are beyond imitation. I want to congratulate you gentlemen, to bid you God-speed. Go on with your work! Don't ever quit!

Dr. Charles F. Strosnider, Goldsboro: The progress in the past fifteen years, as I see it, is based on that sound principle to put first the health of the people of this state, and it has been an uphill road to do this, as the members of our Board will testify. It has been a proposition, and I happen to know that this Board and the members of the Executive Staff have spent many hours in planning, scheming and working for the future. We, today, have seen these efforts and ideas develop into full fruition. It has only been a short while since Dr. Ferrell, Dr. Rankin and others, have succeeded in getting a full-time Health Officer in a number of counties in North Carolina. Anybody who says that this was an easy proposition is speaking of the present day, and not of the time past. It has been a difficult and trying task. A great deal of demonstration work had to be done to show the people and to demonstrate the importance of prevention work. Another great avenue of advance was in that dreaded disease of hookworm which infected so many of our people,

and other diseases that are being mastered through the medium of these various agencies of the Health Department. Fifteen years ago we didn't know what it was or what it meant. Today the people of North Carolina look to their county boards to help and protect them in various diseases, to guard the safety of their water supply and milk and food supply. These boards get their inspiration, and many suggestions, from our State Board of Health. I am happy to see this day when the people are taking up the idea of health. Children are being taught health. The coming generation is going to see to it that North Carolina is made a better place in which to live. The people are looking to this Board to protect them. Members of the Board and members of the State Society: We have a responsibility greater today then we had in the past, because in the past the people did not expect much from us from a health standpoint. Today their ideas and expectations are great. I want to congratulate the various boards of health for the great work they are doing and, Gentlemen of the Board, you ought to be congratulated in the fine efficient organization which you built up, and, for one, I shall oppose any attempt to disrupt the present organization as long as it meets the needs at it has done in the past and is doing in the present.

Upon motion, the Report of the Secretary was unanimously adopted.

The meeting heard a short talk by Mr. T. E. Browne, Director Vocational Education, who stated that the Department of Education is now in position to extend vocational training to physically disabled or crippled civilians in the state, through a Federal appropriation, and asked the co-operation of the medical profession throughout the state in bringing the department in touch with disabled civilians who might be given the benefit of this training and thereby become self-sustaining and productive citizens.

The Chairman: On behalf of the Conjoint Session, I want to thank you, Mr. Browne, for occupying the five minutes so wisely as you did. As you truthfully say, there is no man who can put you in touch with these men so readily as the doctor. I may say to the average doctor, there is nothing he can do that puts a finer flavor in the convalescent patient's mouth than this: "Well, now, John, you have lost your leg, but you haven't lost your heart or your soul. The State is ready to take you now and teach you how to make a living in another way." That is fine and along the constructive line that the Board of Health and the doctors should pursue. I would like to ask Mr. Browne if this applies to the boys who came back from the war incapacitated.

Mr. Browne: Mr. Chairman, the Veteran's Bureau takes care of those who come under that phase of it. If it is a citizen whose injuries have occurred since he came back from the army, in civil life,

and he isn't entitled to that larger service, then it is open to him. Any citizen of the State who has been disabled because of injury or disease.

DR. DUNN: Will this apply to the ex-service men for whom the period for vocational training under the Veteran's Bureau has expired, after the period has expired?

MR. BROWNE: I am going to take the liberty of saying that as far as our funds will permit, if they have exhausted the limitations of that service, we will render any service we can, because I think that is the function of the State Rehabilitation service.

THE CHAIRMAN: Gentlemen, that concludes the formal work of this session. If there is anything that any gentleman present desires to bring before the Conjoint Session, we will be very glad to hear it.

DR. CYRUS THOMPSON, Jacksonville: I don't think there is anything, Mr. Chairman, that we need to bring before the meeting. I know the Board feels very grateful to the gentlemen who have discussed the report and spoken so handsomely about the work of the Board. I want to tell you how proud we are in your pride in us.

THE CHAIRMAN: I just want to say in conclusion that the Board is very, very appreciative of the cordial and loyal support that it gets from the average doctor, from the big doctor, and the little doctor, and all the doctors in North Carolina. It invites your cordial cooperation and it invites your criticism. It invites your comment on any of its policies, on any of its actions. I want to call your attention here to a brief report I shall submit this afternoon to the House of Delegates for its consideration, further emphasizing the policies of the State Board of Health along the line of placing the responsibility for the local activities of its Boards on the local medical profession in the separate counties of the state. The Board of Health, through its central office in Raleigh, will do certain things in certain counties, provided the County Medical Society wants those things done. It will carry on certain kinds of clinics, clinics on health work there, if the county society wants it done. I want to say to you gentlemen that the responsibility for that kind of work rests upon the medical profession. It is their duty to see that it is done; it is their privilege to see that it is done. Much educational work has been done by the work of the daily press and magazines, the work of the State Board of Health and the local boards of health, and of the average doctor. Let's not forget him because, after all, he is the mainspring of our work. Ideals of the community have advanced; they are demanding these things, and I want to submit to you gentlemen that it is not up to the Rotary Club, it is not up to the Kiwanis Club or any other club to lead public health work in the local counties in North Caroline. It is up to the local doctors. The work of doctors developed the things that made public health work possible. We cannot, we dare not, abdicate in favor of any club, or any society, or any organiza-

tion. The responsibility for continuing that work, for supervising that work, lies in the hands of the medical societies of the counties. Please take that thought back home and be prepared to assume that leadership which your education, your social position, your superior knowledge and intelligence, fits you to take. Thank you again, gentlemen, for your presence here and your loyal support and your kindly and unstinted words of praise that brought joy to the hearts of the secretary and every member of this Board.

(Adjourned.)

REPORT OF COMMITTEE ON OBITUARIES

WEDNESDAY, APRIL 16, 8:00 P. M.

Dr. J. V. McGougan, President, in the Chair

THE FOLLOWING ARE THE NORTH CAROLINA PHYSICIANS WHO HAVE DIED DURING THE PAST YEAR

Dr. FRANCIS EMORY ASHBURY
ASHEBORO

Dr. GEORGE SITGREAVES ATTMORE
STONEWALL

Dr. THOMAS BEATH
RALEIGH

Dr. CHARLES BEERS
ASHEVILLE

Dr. ARTHUR W. CALLOWAY
ASHEVILLE

Dr. THOMAS ISRAEL FOX
FRANKLINVILLE

Dr. EUGENE BYRON GLENN
ASHEVILLE

Dr. GEORGE WASHINGTON GRAHAM
CHARLOTTE

Dr. ROBERT H. HARGROVE
ROBERSONVILLE

Dr. NEEDHAM B. HERRING
WILSON

Dr. WILLIAM N. HICKS
DURHAM

Dr. JULIUS J. HILTON
GREENSBORO

Dr. EVANDER McNAIR McIVER
JONESBORO

Dr. ELIJAH BRODIE MEADOWS
OXFORD, R. F. D. NO. 3

Dr. BENJAMIN H. PALMER
SHELBY

Dr. JAMES JONES PHILLIPS
RALEIGH

Dr. ALFRED A. PHIPPS
GREENSBORO

Dr. HENRY L. PITTMAN
WEST DURHAM

Dr. JAMES M. REECE
ELKIN

Dr. JAMES R. STERRITT
DURHAM

Dr. J. K. STOCKARD
GREENSBORO

Dr. JOHN ALEXANDER WILLIAMS
GREENSBORO

The following report of the Committee on Obituaries was read by Dr. A. W. Knox, Chairman:

DR. FRANCIS EMORY ASBURY

ASHEBORO

BY

Dr. C. C. Hubbard

Dr. Francis Emory Asbury was born in Berryville, Virginia, in 1845, and lived there until the War Between the States, when he enlisted in the Confederate Army and fought through the four years

of the war. When about 21 years of age, he came to North Carolina and soon afterward took up the study of medicine, receiving his medical education at Charleston Medical College.

He located for the practice of medicine at Asbury, in Montgomery County, and remained there until 1914, when he moved to Asheboro, and lived there until his death.

He was twice married, the first time to Miss Emma Coble, of Randolph County, and to this union were born one son and seven daughters. Two of the daughters died some years ago—the other children survive him. He was married the second time to Miss Flora Richardson, of Greensboro, who is still living.

He was a member of the Randolph County Medical Society from its organization, and was unfailing in his attendance at its meetings. His interest in the work of the county and State societies was strong up to the day of his death, and he frequently contributed papers to these bodies.

He was an upright, conscientious, Christian man, ready to do his part for the common good. He was opposed to all forms of vice and iniquity, and was ever found on the right side of all moral questions. His interest in his Medical Society was duplicated by his interest in his church, and he was superintendent of the Sunday School at Asbury for many years. His death came while he was attending the District Conference of the Methodist Episcopal Church at Pleasant Garden, April 11th, 1923.

Upon the death of Col. A. C. McAlister, Dr. Asbury was elected Commander of the Randolph Confederate Veterans, and held this office until his death.

He loved his comrades and was faithful to his friends.

Living as he did to the ripe old age of 78 years, Dr. Asbury had an opportunity to serve his fellow men faithfully and well, and he in every way measured up.

DR. GEORGE SITGREAVES ATTMORE

STONEWALL

Dr. George Sitgreaves Attmore, of Stonewall, N. C., the oldest member of North Carolina State Medical Society, died in a hospital at New Bern on June 2nd, 1923, from injuries caused by a fall several weeks before, at the age of 76. He was one of Eastern Carolina's best-known physicians. For a quarter of a century he was the leading figure in political affairs in Pamlico County.

Born January 4, 1847, he was the son of George S. Attmore and Mary Taylor Attmore, and as a boy attended the Hillsboro Military Academy. After the Civil War—through which he served in Moody's Battery, North Carolina Troops—he entered the College of Physicians and Surgeons in Baltimore and graduated in 1870.

Though a native of New Bern, where he practised medicine only a few months, he soon removed to Stonewall, N. C., and there continued his professional work until the date of his injury. He came

to be recognized as an authority on malarial fever, and particularly so on *hæmorrhagic* malarial fever—a very fatal type of the disease. He witnessed the *first* case of the latter that was reported to the American Medical Association; and he was the *first* physician to administer an anæsthetic in New Bern. He was an upright man—forceful in character and left an unblemished name.

Dr. Attmore was survived by his wife, Mrs. Katie Lane Attmore and three children: Mrs. J. Dolph Long, of Graham; George S. Attmore, of New Bern, and Taylor Attmore, of Stonewall, Superintendent of Pamlico County Schools.

DR. THOMAS BEATH

RALEIGH

BY

DR. FRANK M. REGISTER

The subject of this short sketch, Dr. Thomas Beath, was born August 24, 1867, in the Province of Ontario, Canada. He died August 17, 1923, in Toronto, Canada, while on a visit there. A wife and four children survive. He graduated in medicine at Toronto University, Toronto, Canada, and practised medicine at Boissevaine and Winnipeg, Manitoba. He owned and operated a splendid hospital at Winnipeg. In 1919 his health gave way under the stress and strain of a large practice and he retired from active practice, and came to the States looking for a climate suitable to his particular need. He finally found this ideal place, as he expressed it, in Raleigh. He was a man of high ideals and education and honest to the core. He was a member of the American Medical Association, State Medical Society, the Wake County Medical Society, and First Presbyterian Church of Raleigh.

> "He had then the grace, too rare in every clime,
> Of being, without alloy of fop or beau,
> A finish'd gentleman from top to toe."

DR. CHARLES BEERS

ASHEVILLE

Dr. Charles Beers was born in Greenville, Ohio, in 1872; graduated from the Medical College of Ohio in 1897; married Miss Alma Birely at Arcanum, Ohio, in 1900; and practised his profession there until he came to Asheville, N. C., in 1908, in the effort to regain his failing health. He had retired from active work until the influenza epidemic in 1918, when—true to his chosen profession—he re-entered the medical field and rendered efficient services to hundreds then in direct need. He died in October, 1923, at Asheville, respected and esteemed by all who knew him.

DR. ARTHUR W. CALLOWAY

ASHEVILLE

Dr. Arthur W. Calloway was born in Hamilton, Ohio. He came to Asheville, North Carolina, about 26 years ago, associating himself with Dr. Lynn in the practice of medicine. He was married in Asheville and during his residence there was active in church, social, professional and civic life. He was once President of the Buncombe County Medical Society. He was a graduate of the Chicago Medical School and of the Harvard Medical School. Recently he served on the Board of Deacons of the Presbyterian Church at Asheville, and at the time of his death was Vice-President of the Lions' Club. He was an active Mason of the 32nd degree, a member of the Mt. Herman Lodge and Scottish Rite bodies of Asheville. He was fifty-two years old and is survived by his wife, Mrs. Charlotte Calloway and two children, Miss Anne Calloway (a student at Oxford, Ohio) and James Calloway, of Asheville.

Dr. Calloway was considered one of the leading authorities in his specialty, diseases of the stomach; and, in recent years, he had contributed important articles thereon to medical magazines and publications. For the past few years he was said to have been suffering ill health caused by stomach trouble, believed to have been cancer. Becoming despondent because of these conditions, he—on Thursday, December 6th, 1923—fired a shot into his chest, causing instant death. Accompanied by relatives and friends, his body was taken to Hamilton, Ohio, his former home, for burial.

Resolutions, indicating the high respect and esteem in which he was held both by his chosen profession and the community, were adopted by the Buncombe County Medical Society and the Asheville Lions' Club.

DR. THOMAS ISRAEL FOX

FRANKLINVILLE

BY

DR. C. C. HUBBARD

Not all of those whom we acclaim as heroes are found on the battlefields of earth, and not all good fighters are found wearing the uniform of our armies, but many a noble hero has lived a quiet, unassuming life, giving his best day by day for others; and many a stern battle has been fought of which the world has never heard, and the victor went unhonored and unsung.

The subject of this sketch, Dr. Thomas Israel Fox, of Franklinville, N. C., was one of that large class of practitioners in our State who, of quiet mien and unassuming manner, labor without ceasing for the good of others. He was patient and sympathetic toward all classes of society, essentially human in his viewpoint, and never for-

got *the man*, in his interest in the disease. He won the confidence of his people, not only in his ability to care for them when ill, but in his understanding sympathy in all their cares.

Dr. Fox was born April 22, 1865, and inherited his interest in medicine from his father, Dr. Michael L. Fox. He graduated from Vanderbilt University in 1894, and began his practice in Franklinville, where he still lived up to the time of his death. He died of cerebral hemorrhage September 3, 1923, the attack coming on without warning while he was driving with his wife and children. After a few hours of unconsciousness he passed to the greater life beyond.

He was married August 20, 1903, to Miss Annie Staley who, with two sons and four daughters, survives to mourn the loss of an affectionate husband and father.

At the age of fifteen, Dr. Fox was confirmed as a member of the Evangelical Lutheran Church, and was a loyal and useful member until his death. He was devoted to his home and family, and faithful to his duty as a medical adviser to the people for whom he labored, and leaves behind a record of a noble and upright Christian life.

In his professional relations he was always "fair and square," being particularly considerate of other physicians, and held their respect and confidence. He joined the State Medical Society soon after obtaining his license, and attended the meetings every year if it was at all possible for him to do so. He was elected vice-president of the State Society in 1919, and president of his District Medical Society in 1921. He acted as president, or as secretary of Randolph County Medical Society, several times, and was always interested in its activities. His passing is a heavy blow to the medical fraternity of his county, as well as to his family, his church and his community.

Strikingly applicable to him are the words of Will Carleton:

This undecorated soldier of a hard, unequal strife
  Fought in many stubborn battles with the foes who sought their life,
When so many pined in sickness he had stood so strongly by.
  Half the people had a notion that the doctor couldn't die;
They have somehow lost their bearings, now this landmark is away,
  And must slowly learn the lesson how to live from day to day.

DR. EUGENE BYRON GLENN

ASHEVILLE

BY

DR. F. L. SILER

Dr. Eugene Byron Glenn, son of Marion Sevier and Martha Ann Curtis Glenn, was born in Buncombe County, June 21, 1871. He lived on a farm till the age of seventeen, then attended high school and Weaver College. He was a student in Jefferson Medical College of Philadelphia from 1892 to 1896, when he received his diploma.

After being licensed to practice in North Carolina, Dr. Glenn returned to his native county and located in the City of Asheville, where his sterling qualities and genial nature soon won for him a splendid practice which he held until his death, which occurred after a brief illness on March 30, 1924.

From the *Asheville Citizen* of March 31, we quote the following:

"He served both county and city administrations in various departments of health activities during the early days of his practice and was also interested in hospitals. In 1913 he aided in the reorganization of the Meriwether Hospital and became vice-dean and chief of the surgical staff. He served for many years in the national guard and was in the reserve during the World War.

"Asheville has lost one of its noblest physicians and most lovable citizens and the entire community feels the loss.

"Hundreds, from every walk of life, called at the residence on Starnes Avenue yesterday and last night and silently filed past the casket, paying the greatest tribute that it is possible to pay the dead, an eye of tender reverence and tears shed for one loved by all."

Some one has said of him that "his profession was his life, service his greatest joy, and his family and friends his very existence," a thought over which we could well ponder, for it was in rendering that splendid unselfish service that he found the full joy of living.

Robert Burns stood by the grave of an old friend and wrote these lines:

An honest man here lies at rest
As e'er God with His image blest,
The friend of man, the friend of truth,
The friend of age and guide of youth.

In a profession so far removed from an exact science as ours, a profession harassed by every conceivable form of camp followers, it has been a Godsend to have a man of Dr. Glenn's ability and understanding. As health officer and physician, he endeavored to impress upon the public that the medical profession holds no mysteries, that the wisest are fallible, and that accurate diagnosis is often impossible; and we feel that we might borrow the thought from Pope and say: "An honest doctor is the noblest work of God."

His service to humanity was not confined to his professional work, but as President of the Buncombe County Good Roads Association for years, as member of many fraternal bodies, and as a friend of every civic betterment, he played a noble part, and when his body was to receive the last rites, a busy street was closed for hours that the people, both small and great, might pay a just homage to a friend of man.

While for a number of years Dr. Glenn had given up his general practice and became one of the leading surgeons of the state, yet he never lost touch with humanity and with medical progress, and through frequent consultations with specialists in their different lines of work was thoroughly conversant with the best methods of render-

ing service to humanity, a service which we all might emulate in being aggressive with the maladies of youth, firm with those suffering from diseases incident to middle life, and imbued with the spirit of humanity that helps us make a tactful retreat with those who have read the faded letters on life's mile stones marked "three score and ten."

Dr. W. L. Dunn, Asheville:

Mr. President: There is much that our hearts and our friendships might prompt us to add in a tribute to Dr. Glenn. However, I feel, with the long list of obituaries here, it is probably not well for us to take up your time. Those of us who were particularly close to Dr. Glenn have had the profoundest respect for the man's bigness of heart, for his fineness of soul, and I think perhaps one of the biggest tributes I heard paid to him was the other day: "No man ever knew Glenn to do anything mean."

DR. GEORGE WASHINGTON GRAHAM

CHARLOTTE

Dr. George Washington Graham, son of Ex-Governor William A. Graham and Mrs. Susan Washington Graham of Hillsboro, N. C., was born at Hillsboro August 19th, 1847, and died at his home in Charlotte May 9th, 1923. His early education was received at the Misses Nash & Kollock's School at Hillsboro and at Dr. Alexander Wilson's Academy at "Melville" in Alamance County. He graduated at the University of North Carolina and then studied medicine at the University of Virginia, and, later, at the Medical Department of the University of New York in New York City, where he received his degree of M. D. in 1871.

He first located in Atlanta, Georgia, and met with gratifying success as a general practitioner. Later, he took a special course in diseases of the eye, ear, nose and throat at the New York Eye and Ear Infirmary, was graduated there in 1875 and settled in Raleigh, where he soon established an enviable reputation in his chosen specialty. In 1880 he went to Charlotte for a wider field of practice, and his success there was immediate and continuous until he retired in 1907.

He was a member of the Raleigh Academy of Medicine, the State Medical Society, the Charlotte Academy of Medicine, President of the Charlotte Library and the Charlotte Library Association. He was an ardent lover of his native State and a staunch defender of the authenticity of the Mecklenburg Declaration of Independence. His historical and literary works on this subject, in collaboration with Dr. Alexander Graham, are accepted by many as authoritative.

Dr. Graham was married three times: First, to Miss Sallie Shaver of Atlanta, who died in 1887; second, to Miss Alice Leonora Alexander of Charlotte, who died in 1905; third, to Miss Imogene Tunstall of Alabama, who survives. Three children—all now living—were born to the first union; none to the others. Besides his wife and chil-

dren and 11 grandchildren, Dr. Graham is survived by two brothers: Major John W. Graham of Hillsboro and Judge Augustus W. Graham of Oxford. His only sister, Miss Sudie Graham, was the wife of Chief Justice Walter Clark of the State Supreme Court.

Dr. Graham was of pure Scotch-Irish descent. His ancesters of that blood-lineage settled in Mecklenburg County prior to the Revolutionary War. His grandfather was present at the reading of the Mecklenburg Declaration of Independence on May 20th, 1775, became a Major of Dragoons during the Revolution and commanded troops in the battle of Charlotte September 26, 1781, was wounded in this battle, recovered and was actively engaged in the American Army until the end of that war. In the war of 1812 he served as a Brigadier General. His father, Governor William A. Graham, was Secretary of the United States Navy from 1850 to 1852. It was he who suggested and organized the expedition to compel the Japanese to open their doors to the civilized nations of the world.

Dr. Graham was intensely loyal and devoted to his state and county and to the University of North Carolina, and he never tired of depicting the glorious achievements of each. He was sanguine of temperament and was closely attached to his friends and relatives. His death was the cause of extreme sorrow, not only in Charlotte but throughout the entire state.

DR. ROBERT H. HARGROVE

ROBERSONVILLE

Dr. Robert H. Hargrove was born in 1855, graduated in 1877 from the University of Maryland School of Medicine and College of Physicians and Surgeons, in Baltimore; was licensed in 1879 by the State Board of Medical Examiners, and died at his home in Robersonville, in December, 1923.

DR. NEEDHAM B. HERRING

WILSON

Dr. Needham B. Herring—Wilson's oldest physician—was born April 2, 1839, and died at his home in Wilson, North Carolina, on May 31, 1923, in his 85th year. He began the practice of medicine at Wilson in 1873 and continued his professional work there until a few years ago. He is survived by three sons and three daughters.

DR. WILLIAM N. HICKS

DURHAM

Dr. William N. Hicks—Durham's oldest physician and a man well known throughout the city—died at his home in Durham

October 17, 1923, of a complication of diseases attendant upon old age. He was about 83 years old. For many years he was one of the city's best and most popular physicians.

DR. JULIUS J. HILTON
GREENSBORO

Dr. Julius J. Hilton, well-known physician of Greensboro, died at his home in that city September 23, 1923, and was buried in Green Hill Cemetery. Practising physicians of the city served as honorary pall-bearers.

DR. EVANDER McNAIR McIVER
JONESBORO

Dr. Evander McNair McIver died at his home in Jonesboro on July 11, 1923, after a short illness. His medical education was received at the University of North Carolina School of Medicine at Chapel Hill, North Carolina. He was a member of the last General Assembly and served on a number of important committees in that body. The funeral was held at the Presbyterian Church, of which he was an officer; and the burial, in charge of the Masons, was in Buffalo Cemetery.

DR. ELIJAH BRODIE MEADOWS
OXFORD, R. F. D.

Dr. Elijah Brodie Meadows, aged 49, died at his home at Culbreth, near Oxford, N. C., on Sunday, December 3, 1923, from the effects of a stroke of paralysis which occurred several years ago. He was graduated from the University College of Medicine at Richmond, Virginia, in 1901, and was one of the most prominent and successful physicians in Granville County. He is survived by his widow, who was Miss Julia Clement, and their seven children. He was a consistent member of the Baptist Church. His interment was in Elmwood Cemetery, at Oxford.

DR. BENJAMIN H. PALMER
SHELBY

Dr. Benjamin H. Palmer, well known physician of Shelby, N. C., died on Sunday, February 10, 1924, after a stroke of paralysis on the preceding day. Dr. Palmer was 53 years of age, a son of Dr. V. J. Palmer, one of Durham County's noblest physicians. He graduated at Louisville Medical College in 1897 and practised his profession in Shelby, where he was eminently successful. He was also active in

the religious and business life of the community. He was a Mason and also a Shriner. He was married to Miss Emma Cline, who survives him together with their five children.

DR. JAMES JONES PHILIPS

RALEIGH

BY

DR. JULIAN M. BAKER

Died at his home in the city of Raleigh, in the early morning of April 1, 1924, of angina pectoris, after an illness of a few hours, James Jones Philips, A. B., M. D.

Up to the night before he was in apparent good health and death coming as it did, unexpectedly and suddenly, made the shock to his devoted family and numerous friends throughout the state distinct and profound.

James Jones Philips was born in Tarboro, at the home of his parents, the late Judge Frederick Philips and his wife, Martha Hyman Philips, on June 14th, 1870. His childhood was spent in his native town, where he attended school and was prepared for college by the late Frank S. Wilkerson, who for half a century labored so industriously in instructing the young men and boys of the community, many of whom afterwards occupied distinguished positions in the State and in the Nation. He entered the University of North Carolina in September, 1886, graduating therefrom in June, 1890, with the degree of Bachelor of Arts. Subsequently he studied medicine at the College of Physicians and Surgeons in New York City, and was graduated in 1893 from that famous institution. Immediately after graduation he served as assistant, and later, as house-physician, to the New York Hospital, Interne at St. Luke's, at St. Mary's Hospital for Children, and as visiting physician to the Good Samaritan Dispensary, all in the City of New York. He served also as resident physician to the Jekyl Island Club, off Savannah, Georgia. All these appointments were gained by competitive examinations, and illustrate in a very practical way the complete and thorough preparation made for the life work he was about to undertake. Reared in a home of wealth, of culture and refinement, a home noted for generations for its genuine Southern hospitality, the real Democracy of good breeding, the polished and courtly manner of the Christian gentleman, was his by inheritance.

With this splendid foundation he commenced the practice of medicine in the City of New York, and continued to practice there for ten years, being associated with some of the leading men of the profession in his daily work, participating in research work, and in discussions of all phases of scientific investigation in the academies and medical societies of this great medical center. In this large and competitive field he achieved marked success and established a well-merited reputation for faithful, painstaking, and intelligent service, both with his confreres and his clientele.

Dr. Philips was married on October 31, 1900, to Miss Marion Ewing Hamilton, daughter of the late Matthew Allen Hamilton, of Baltimore, Md.—a true daughter of the South, strongly attached to its ideals and customs. It is no wonder, then, that soon they should both feel the impelling call to come back to the South, and rear their children among their own people. Consequently Dr. Philips returned to his native town, and cast his lot wholeheartedly into the professional and civic activities of the community; at once taking his place with the enthusiastic and progressive younger generation of his professional associates, quickly establishing a large and lucrative practice, and, by courteous manner, fair and scrupulously ethical conduct in his relations to his fellow physicians, he commanded the respect and esteem of all. After several years in practice in Tarboro, Dr. Philips decided to specialize in pediatrics, for which he was so well equipped by training and experience. Raleigh offered a larger field for him in this new line of work; so, following the advice and encouragement of numerous friends, he moved to Raleigh, where, as in other fields of his labors, he quickly took high rank in its professional and civic life, making friends of all with whom he came in contact, impressing them with his devotion to his profession, his faithful and painstaking attention to his patients, his high ideals of duty and his intelligent application of his profound scientific knowledge gained through years of laborious study and experience.

The last sad rites were attended by a large concourse of sorrowing relatives, friends and neighbors, many of whom were from his old home. The floral tributes were many and beautiful, tokens of the esteem in which he was held.

He leaves to his faithful and devoted wife and two mourning daughters, just budding into womanhood, to his aged and feeble mother, his sisters and brothers, the memory of an unsullied character and a consciousness of duty well done. A host of devoted friends will mourn with them, and cherish the memory of his faithful service to humanity, and of the high ideals exemplified in the life of the Christian physician and gentleman.

Dr. Philips had been a devout communicant of the Protestant Episcopal Church since childhood, devoted to its tenets and active in its affairs. Mindful of this and the many virtues which characterized his life as one of service, of sacrifice, and of love, and while standing by his open grave in the beautiful Oakwood cemetery, where repose the mortal remains of so many distinguished men and women of our Capital City and our State, amid banks of beautiful flowers, tributes from those who loved him, as the Bishop and assisting clergy committed his body to earth, and his soul was wafted to eternity, the consoling thought for the bereaved ones came to one who had known him since childhood, and who remains behind yet for a little while, that

> The bark bearing his soul to eternity
> Was not sailing a chartless sea,
> For the Helmsman who was guiding it
> Was the Pilot of Galilee.

DR. ALBERT A. PHIPPS

GREENSBORO

Dr. Albert A. Phipps, aged 92—probably the oldest physician in North Carolina, and a veteran of the Civil War—died of apoplexy on June 19, 1923, at his home near Greensboro. He was born in Guilford County, and graduated in medicine at the University of Virginia. When the Civil War opened, he promptly enlisted and served with gallantry in the Confederate Army. He leaves a widow and nine children.

DR. HENRY L. PITTMAN

WEST DURHAM

BY

DR. R. L. BOWMAN

Dr. Henry L. Pittman was born in Fairmont, Robeson County, in 1891, and died on December 1, 1923, of pneumonia in West Durham, where he was practising medicine at the time of his death. He was graduated from the University of Maryland, in the class of 1921. His wife and five children survive. He was a member of the Durham County Medical Society and the State Medical Society.

DR. JAMES M. REECE

ELKIN

Dr. James M. Reece, aged 55, one of Surry County's prominent physicians, was found dead in bed at his home in Elkin, N. C., on June 1, 1923. He received his diploma of M. D. from the College of Physicians and Surgeons in Baltimore, in 1886, and joined the North Carolina State Medical Society in 1904. He was a brother of Attorney W. L. Reece, of Dobson, N. C.

DR. JAMES R. STERRITT

DURHAM

Dr. James R. Sterritt—one of Durham's most prominent and popular physicians—died Sunday night, June 9, 1923, at Watts Hospital, Durham, following an operation for abscess of the lung. He was 42 years of age; was born at Lexington, Virginia; received his academic education at Washington and Lee, and his medical degree at Richmond College, Richmond, Virginia. He first practised medicine at Louisburg, then at Haw River, coming eight years ago to Durham, where he built up a large practice. He was buried at his home in Lexington, Virginia, and is survived by his widow and two children.

DR. J. K. STOCKARD

REIDSVILLE

BY

DR. J. T. J. BATTLE

Dr. J. K. Stockard was born in Alamance County in 1858. He attended a first-year medical course at the College of Physicians and Surgeons, Baltimore, Maryland, and graduated at Vanderbilt University in 1886. He began the practice of medicine in Randolph County. When war with Spain was declared, he volunteered and was a Captain of the 2nd North Carolina Regiment. He was promoted to the rank of Major and sent to the Philippine Islands, where he remained three years. He returned to the States and located at Reidsville. He was in service during the World War to its termination. He then located again in Reidsville, doing general practice up to the time of his death on March 23, 1923.

DR. JOHN ALEXANDER WILLIAMS

GREENSBORO

Dr. John Alexander Williams of Greensboro, North Carolina, noted physician and surgeon, ended his life in a sanitorium at Baltimore on September 23, 1923—this act being attributed to nervous depression brought about by his ill health for the past few years.

Dr. Williams was born in Person County in 1872, was educated at Wake Forest College and the University of Virginia, where he took his medical degree. He then went to the New York Polyclinic Hospital for post-graduate work. Practising first in Caswell County and at Roxboro, he then went to Reidsville, was associated with Dr. J. C. Walton and, later, with Dr. J. W. McGehee. His work here brought him deserved reputation, both in general practice and surgery, and he made hundreds of friends in this section. In 1906 he removed to Greensboro and joined the staff of St. Leo's Hospital, was its first president and took an active part in directing its fortunes always. About 1909 he began to devote his entire time to surgery, forming a partnership with Dr. J. W. Tankersley, and these two men were closely connected in their work thereafter.

He was a member—and had been President—of the Guilford County Medical Society, President of the North Carolina Hospital Association, member of the American Medical Association and a Fellow of the American College of Surgeons.

In 1908 he was married to Miss Reece, daughter of the late Joseph M. and Mrs. Reece. She died in 1921, leaving two daughters.

Dr. Williams' success had made him not only one of the best-known surgeons in Greensboro, but throughout the state. He possessed, to a remarkable degree, the powers of diagnosis and of that skillful, accurate and careful work which goes to the making of a surgeon. He also had the unbounded confidence of his patients who, without exception, were devoted to him, trusted him and loved him.

The report of the Committee on Obituaries was accepted.

REPORT

OF THE

BOARD OF MEDICAL EXAMINERS OF THE STATE OF NORTH CAROLINA

K. P. B. Bonner, M. D., Morehead City
Secretary to Board

Since the publication of the Transactions of the Medical Society of the State of North Carolina, four sessions of the Board of Medical Examiners of the State of North Carolina have been held. A special session was held in Raleigh, September 10, 1923, at which three applicants received license by endorsement of credentials. The regular mid-winter session of the Board was held in Chapel Hill on November 29, 1923, at which ten applicants received license by endorsement of credentials. At the regular mid-winter session, only applications for endorsement of credentials are considered; no written examinations being given. Eleven applications were accepted at this session, but one of the applicants died very suddenly on the following morning before the license could be issued and delivered and the Board unanimously voted to refund the fee to the widow of the deceased physician and to remove his name from the list of licentiates. A special session was held in Raleigh on April 15, 1924, at which two applicants were granted license through endorsement of credentials.

At the annual session of the Board held in Raleigh June 23 to 28, 1924, one hundred and sixty-six applicants appeared. Of this number, one hundred and forty-one took the written examinations and twenty-five applied for endorsement of credentials. There were fifty-three students taking the written examination of the first two years in medicine; leaving eighty-eight applicants taking the written examinations for license.

The Board held an adjourned session in Raleigh on Monday, July 21, 1924, to assemble the grades and determine the average grades before the sealed envelopes containing the registration cards were opened, which established the identity of the applicant. As a result of these sessions, one hundred and nine physicians were licensed to practice medicine in North Carolina, including one limited license wherein the territory was restricted.

The young physicians taking the written examinations, as a whole, were possessed of a high order of scholarship and professional training, and average grades ran much higher than in former years. It is significant that the great majority had secured a

bachelor's degree in some college preliminary to beginning the study of medicine. To Doctor Oscar Dixon Baxter, High Point, goes the honor of making the highest general average grade of 96%. Doctor Nathan Anthony Womack, Reidsville, took second honor with a general average grade of 95%. The third highest general average grade was 93 5-7%, and was made by Doctor John Warren Henderlite, Raleigh. Sixteen physicians made an average grade above 90%.

One hundred and twenty-eight applicants appeared for license at the various sessions during the past year. Of this number, one hundred and twenty-four were accepted and four rejected. The various lists of physicians receiving license follows:

Licensed by Endorsement of Credentials, Sept. 10, 1923

Name	*Address*	*Certified From*
Allen, M. Young	Moultrie, Ga.	Georgia
Blackshear, Thomas Joseph	Dublin, Ga.	Georgia
Shaw, Lillian Eliose	Charlotte	Nat. Board

Licensed by Endorsement of Credentials, Nov. 29, 1923

Cater, Clinton Duncan	Perry, Ga.	Georgia
Fairbanks, Charlotte	St. Johnsbury, Vt.	Vermont
Fox, Albert Cullen	Waynesboro, Va.	Virginia
Gambrell, Grover Cleveland	Rutledge, Ga.	Georgia
George, John Cecil	Cedarville, O.	Ohio
Lackey, Marvin Alfonso	Portsmouth, Va.	Virginia
Laye, Hal Albert	Wilmington	Pennsylvania
Peek, David E.	Six Mile, S. C.	South Carolina
Royster, James Hunt	Richmond, Va.	U. S. Navy
Scales, Robert Bass	St. Petersburg, Fla.	Massachusetts

Licensed by Endorsement of Credentials, April 15, 1924

Andrews, Edward David	Sumter, S. C.	South Carolina
Sullivan, Claude Hutcheson	Charlotte	Georgia

Licensed by Examination, July 21, 1924

Name	*Address*	*Grade Average*
Anderson, Richard Speight	Whitakers	88
Arrasmith, Thomas Milton, Jr.	Hillsboro	88 5/7
Aycock, Thomas Bayron	Pikeville	85 3/7
Baxter, Oscar Dixon	High Point	96
Bell, Horace Orlando	Wilmington, Va.	92
Best, Deleon Edward	Warsaw	88 3/7
Bittinger, Samuel Moffett	Sanatorium	90 4/7
Black, George William	Mount Holly	88 6/7

Blakey, Ryland Arwood	Fayetteville	89 1/7
Blue, Irving H.	Carthage	84
Bowles, Francis Norman	Chester, Va.	87 4/7
Buckley, Timothy Stephen	Richmond, Va.	84 5/7
Bugg, Charles Richard	Baltimore, Md.	93 6/7
Byerly, Wesley Grimes	Cooleemee	88 3/7
Cardwell, Edgar Parmele	Wilmington	88 4/7
Carpenter, Coy Cornelius	Morrisville	87 4/7
Clarke, Francis Mann	Middletown	91 6/7
Colvard, George Todd	Jefferson	86 1/7
Costner, Walter Vance	Lincolnton	89 4/7
Curtis, Ward Cleveland	Winston-Salem	83 5/7
Darden, Douglas Beaman	Wilson	87
Daughteridge, Arthur Lee	Rocky Mount	87 4/7
Davenport, Carlton Alderman	Mackeys	83 2/7
Duncan, Stacy Allen	Dunn	88
Erwin, Horatio (col.)	Asheville	80 5/7
Fields, Daniel Allen	Laurinburg	84 2/7
Fox, Norman Albright	Guilford College	93 2/7
Frazier, John Wesley, Jr.	Winston-Salem	88
Fritz, Hubert Hewitt	Hickory	89 4/7
Gaskin, Lewis Roy	Mt. Croghan, S. C.	85 1/7
Goley, Willard Coe	Graham	92 6/7
Goudelock, John Jefferies	Monroe	90 2/7
Groome, James Gordon	Greensboro	86 5/7
Grose, Robert Glenn	Harmony	86
Groves, Robert B.	Lowell	89
Harrington, Cary Lanier	Greenville	90 4/7
Hart, Verling Kersey	Statesville	87 1/7
Henderlite, John Warren	Raleigh	93 5/7
Hogans, Sterling Franklin	Charlotte	86 2/7
Howard, John Richard	Saint Pauls	87 2/7
Howell, Clewell	Whiteville	92
Howell, James Ernest	New York City	82 2/7
Johnson, Harry Lester	Siler City	83 6/7
Jones, Robert DuVal, Jr.	New Bern	89
Jones, Thaddeus Elmore	Kenansville	89 3/7
Knox, Joseph Clyde	Leland	91 6/7
Lloyd, Marelius Dalton (col.)	Washington	82 2/7
McCreary, Albert Benjamin	Raleigh	89 5/7
Malone, Julian Yerkes	Asheville	89 3/7
Martin, Paul Todd	Salisbury	86 2/7
Mason, Manly	Atlantic	86
Mears, George Augustus	Asheville	88
Miner, Allen Alexander	Augusta, Ga.	88 3/7
Moore, Robert Ashe	Philadelphia, Pa.	89 4/7
Morris, George Dillon	Goldsboro	90 6/7
Noblin, Roy Lee	Stovall	84 5/7
Parks, Walter Beatty	Huntersville	89 1/7
Patterson, Fred Marion	Concord	88 2/7
Payne, Frank Limer	Raleigh	87

Perry, Archibald Howell	Louisburg	86 3/7
Perry, Frank Leslie	Louisburg	90 4/7
Poole, Charles Glenn	Raleigh	88 2/7
Ramsay, James Graham	Salisbury	88 6/7
Riggins, Hazel McLeod	Matthews	89 2/7
Roberts, Bennett Watson	Gatesville	83 6/7
Robertson, Edwin Mason	Woodsdale	87 1/7
Rourk, William Asbury, Jr.	Shallotte	92
Satlof, Leo Myer	Columbus, Ga.	90 3/7
Sharp, Oliver Ledbetter	Greensboro	86 2/7
Sherrill, George William (col.)	Landis	85
Sloan, Allen Barry	Petersburg, Va.	81 4/7
Spikes, Norman Owen	East Durham	89 6/7
Straughan, John William	Siler City	81 1/7
Tayloe, John Cotten	Washington	87 3/7
Taylor, Erasmus Hervey Evans	Morganton	90 4/7
Thompson, Clive Allen	Sparta	90 4/7
Upchurch, Coy Tillman	Apex	88 5/7
Wannamaker, Edward Jones, Jr.	Charlotte	89 6/7
Warren, Bryan Pope	Blounts Creek	84
West, Bryan Clinton	Kinston	89 2/7
White, Francis Willard Moody	Windsor	86 3/7
White, Thomas Preston	Charlotte	85
Williams, William Norman	Pine Bluff, Ark.	86 5/7
Wilson, Lawrence Addison	Fairmont	87 3/7
Womack, Nathan Anthony	Reidsville	95
Wright, Orpheus Evans	Winston-Salem	83 2/7
Yarborough, Frank Ray	Cary	91 4/7

Granted License Limited to Haywood and Madison Counties

Atchley, James M. C.	Hartford, Tenn

Licensed by Endorsement of Credentials, July 21, 1924

Name	*Address*	*Certified From*
Barkwell, John Holloway	Glenwood, Ga.	Georgia
Boylston, Wyatte Clinton	Springfield, S. C.	South Carolina
Bradshaw, Thomas Gavin	Windsor, Va.	Virginia
Byrd, William George	Raleigh	Mississippi
Colson, John Davis	Pageland, S. C.	South Carolina
Copeland, Henry Walter	Jackson, Ga.	Georgia
Davis, Charles Willson	St. Sanatorium, Md.	Maryland
Hening, Thomas Scott	Jefferson, Va.	Virginia
Herod, John	Thorold, Ont.	New York
Kenfield, Harrie W.	Orion, Mich.	Michigan
Lee, Samuel Engle	Sanatorium	Georgia
Northcutt, Eugene E.	Newport, Tenn.	Tennessee
Parry, Leo DeLance	Charlotte	Pennsylvania

Pritchett, Harry Wooding	Whitmell, Va.	Virginia
Rucks, Berry Talmadge	Ashland, Ga.	Georgia
Steele, William Henry	Jackson, Ga.	Georgia
Terrell, John Hudson, Jr.	Canon, Ga.	Georgia
Webb, Marcus Lafayette	Nashville, Ga.	Georgia
Williams, Louis Laval	Asheville	U. S. P. H. S.
Williams, Norman Grady	Canon, Ga.	Georgia
Wyatt, Hubert Lee	Petersburg, Va.	Virginia

EXAMINATION IN CHEMISTRY, HYGIENE AND PHYSIOLOGY

W. M. Jones, M. D.

CHEMISTRY

1. Give briefly the processes involved in the digestion and absorption of milk.
2. Differentiate Hormones and Enzymes, and give example.
3. Name the abnormal constituents that may be found in a microscopical examination of the urine and mention the significance of each.

HYGIENE

4. Give outline of a plan for an acceptable sewage disposal for a Country Home.
5. Name the diseases in the prevention of which artificial immunization is used; detail the method of administration and dose.
6. Give period of incubation of the various Communicable Diseases.

PHYSIOLOGY

7. What are the various physiological processes that maintain Blood Pressure, and what is the significance of Low Blood Pressure?
8. What is Reflex? Describe the Patellar Reflex, and give the significance when increased and decreased.
9. Describe a full Cardiac Cycle, and the nerve impulse governing same.
10. What is a Balanced Diet? Give briefly the necessity of same.

EXAMINATION IN ANATOMY AND EMBRYOLOGY

L. A. Crowell, M. D.

1. Describe the occipital bone.
2. Describe the following sinuses: (a) Superior longitudinal. (b) Lateral. (c) Superior petrosal.
3. Name the structures, in order, that will be divided in a circular amputation of the leg four inches below the knee-joint.
4. Trace a drop of blood from the right auricle to the uterine artery.

5. Describe the deep and superficial palmar arches.

6. Give the origin, insertion and nerve supply of the following muscles: (a) tibialis anticus. (b) omohyoid. (c) supraspinatus.

7. Name the flexor tendons of the wrist.

8. Name the openings in the diaphragm, and the structures that pass through them.

9. How would you differentiate a loop of the jejunum from one of the lower ileum?

10. Describe the ureter, giving its course and relations.

EXAMINATION IN HISTOLOGY, BACTERIOLOGY AND PATHOLOGY

C. A. Shore, M. D.

1. Discuss malignancy of tumors. Name ten benign tumors.

2. Describe the essential gross and microscopic appearance of carcinoma of the stomach.

3. What factors may interfere with the normal return of the blood to the heart?

4. Describe the immunological principles underlying active and passive immunity and give two examples of each.

5. Discuss briefly the bacteriological examination of a water supply. What tests would you make and what is their significance?

6. What are the important sources and agencies of infection of typhoid fever and yellow fever?

7. Given a case of suspected typhoid fever how would you secure specimens for a laboratory diagnosis? Describe your laboratory procedure.

8. What laboratory procedure would you employ in a case of (a) suspected syphilitic chancre? (b) in suspected syphilis in the secondary stage?

9. Draw an outline of the eggs, as they appear on microscopic examination, of two cestodes (tapeworms), and two nematodes (round worms), which are common parasites of man in the United States.

10. How would you determine whether a given organism was Streptococcus hemolyticus, Streptococcus viridans, or a Pneumococcus?

EXAMINATION IN SURGERY

L. N. Glenn, M. D.

1. Give the etiology of: (a) periostitis. (b) abdominal ascites.

2. Give symptoms of: (a) pyelitis. (b) coxalgia.

3. Give diagnosis of: (a) duodenal ulcer. (b) carcinoma of pancreas.

4. Give surgical pathology of: (a) hypernephroma. (b) empyema.

5. Give the surgical treatment of: (a) double pyosalpinx. (b) chronic suppurative osteomyelitis

6. Define: (a) panhysterectomy. (b) cystocele. (c) gingivitis. (d) neoplasm. (e) sequestrum. (f) myomectomy. (g) phlebitis. (h) viscera. (i) pterygium. (j) bursitis.

7. Treat a compound fracture of middle of femur.

8. Amputate at middle of forearm.

9. Justify operations for following: (a) Suspected internal hemorrhage. (b) Cholecystectomy. (c) Cranial trephine. (d) Suprapubic cystotomy. (e) Thoracentesis.

10. Discuss anesthesia.

EXAMINATION IN PHARMACOLOGY, MATERIA MEDICA AND THERAPEUTICS

J. G. Murphy, M. D.

1. What is an anthelmintic? Name the remedies in this class, giving the dose of each.

2. Define diaphoresis. Name three diaphoretics.

3. (a) Give the Latin name for paregoric. (b) Name its constituents. (c) What is official name of tartar emetic? (d) Give the dose.

4. Describe the physiological action of digitalis. Give the dose of the tincture. Name the dose of nitroglycerin. Give the different methods of administering it.

5. Define: (a) Galactagogue. (b) Sialagogue. (c) Emmenagogue. (d) Give example of each and dose.

6. Write a complete prescription for: (a) Insomnia. (b) Cystitis. (c) Bronchitis. (d) Acute otitis media. (e) Iritis.

7. (a) How do stypties and hemostatics differ? (b) Name examples in each class.

8. In prescription writing, what is the meaning of the following?

(a) Recipe. (b) Misce. (c) Signetur. (d) Fiat. (e) Quantum sufficit. (f) p. r. n. (g) t. i. d. (h) a. c. (i) a. a. (j) ung.

9 How would you treat a person poisoned by illuminating gas?

10. Give the symptoms and treatment of poisoning by hydrargyrum chloridi corrosivum.

EXAMINATION ON PRACTICE OF MEDICINE

W. P. Holt, M. D.

1. Discuss dropsy: (a) Give different forms. (b) Diagnostic significance.

2. Define insulin: (a) Symptoms of danger from its administration. (b) Treatment of untoward symptoms from its use. (c) Give briefly quantitative test for sugar in urine.

3. Discuss myxedema and cretinism; give etiology, symptoms and treatment of each.

4. Differentiate tetany from tetanus: (a) Give etiological factors of each. (b) Treatment of each.

5. Differentiate pemphigus, impetigo contagiosa, tinea circinata and herpes zoster.

6. What are prophylactic vaccines? (a) Name four in general use. (b) Give dose and mode of administration. (c) Define opsonic index, and briefly describe how it is determined.

7. Discuss dyspnea and give the clinical significance of each form and import of each.

8. Define: (a) Dysphagia. (b) Aphonia. (c) Aerophagia. (d) Amnesia. (e) Syringo-myelia.

9. Give treatment: (a) Enteric fever. (b) Lobar pneumonia. (c) Standard treatment of malaria.

10. Name the subjective symptoms of hyperacidity and achylia gastrica, and outline treatment of each.

EXAMINATION IN OBSTETRICS, GYNECOLOGY AND PEDIATRICS.

K. P. B. Bonner, M. D.

1. Describe anatomically the uterus and give its relationship in situ.

2. Diagnose a left occipito-anterior position of the unborn babe and detail various stages of normal delivery.

3. Define: (a) Hydatidiform mole. (b) Hydramnios. (c) Placenta succentariata. (d) Caput succedanum. (e) Precipitate labor. (f) Missed labor. (g) Placenta praevia. (h) Postpartum hemorrhage.

4. Diagnose and detail operative procedure for a large right ovarian cyst.

5. What are the indications for a suspension of the uterus? Tell how the operation is done.

6. Define: (a) Endometritis. (b) Perineorraphy. (c) Trachelorraphy. (d) Vulvitis. (e) Uterus bicornis. (f) Sterility. (g) Nymphomania. (h) Vaginismus.

7. Give etiology, symptoms, diagnosis, prognosis and treatment of acute ileo-colitis.

8. Give symptoms, diagnosis and treatment of acute poliomyelitis.

9. Define: (a) Status lymphaticus. (b) Chlorosis. (c) Spina bifida. (d) Thrush. (e) Oxycephaly. (f) Meningocele. (g) Chorea. (h) Noma.

10. Discuss prenatal hygiene from the standpoint of its influence on infant mortality.

The report of the Board of Medical Examiners was accepted.

THURSDAY, APRIL 17, 11:00 A. M.

President McGougan in the Chair

The Secretary of the Society reported the action of the House of Delegates in the election of officers and committees. Upon motion of Dr. Benj. J. Lawrence the report was accepted.

Dr. Cyrus Thompson, Jacksonville:

Mr. President, we are now about at the close of the business of this session, which has been in every way, I think, a very pleasant one. There is nothing in the world sweeter than courtesy in our mingling with one another as we go our journey along through life. I have

noticed, Sir, the very cordial welcome which one town after another from year to year has accorded to the State Medical Society. I am quite free to say, without forgetting the old or making any invidious comparisons, that we never have been more heartily welcomed to any city in North Carolina than we were welcomed to the city of Raleigh on the day of our opening meeting. You know I remarked at the time, Mr. President, that those men who welcomed us might not know anything about medicine. One of them was a lawyer. I could not say that he knew anything about law, because law is a very uncertain subject, but he certainly did know something about medical men. The appraisement he and the Mayor set upon us was very high. I was right proud of the Mayor of Raleigh and an attorney or lawyer who had enough of that genuine good sense to recognize the worth of medical men in North Carolina and throughout the world. Following that welcome we have been handsomely entertained. The County Medical Society and the profession of Raleigh have been exceedingly kind to us. They have entertained us here in the beautiful halls of this magnificent hotel, which makes every North Carolinian proud of the city of Raleigh.

After this much of caloric atmosphere I just want to move this Society to return its very sincere thanks to the city and the profession for the very generous entertainment they have given us.

Motion seconded by Dr. Spencer P. Bass, Tarboro.

Dr. L. B. McBrayer, Secretary:

I also wish to second that motion and, in doing so, express my personal and official appreciation of the most splendid co-operation of the Chairman of the Committee on Arrangements, whom we have honored ourselves by making our President, and the various committees and committee chairmen who have helped. I have never had anywhere more hearty co-operation and more intelligent co-operation, with the know and the will to do. It has relieved me and taken from my shoulders a considerable burden. I wish to make this personal and official recognition of my appreciation thereof, and to second Dr. Thompson's motion.

Dr. McGougan, President:

You have heard Dr. Thompson's motion, seconded by a number of men. I do not believe it is necessary to put it to a vote, for I know it would be unanimous, but I shall ask you to stand for just a minute.

Dr. Thompson:

Mr. President, it is unanimous except for the modesty of the local brethren.

Dr. McGougan, President:

The time has come to install our new President, and I shall ask Dr. Thompson and Dr. Hicks to escort the new President to the chair.

THE PRESIDENT, DR. J. V. MCGOUGAN:

Dr. Anderson, I would just like to say that had it not been for the co-operation and support and encouragement of the profession at large I should have made a miserable failure. I do not know that it is necessary to repeat what you have heard this morning, but I do especially want to thank the Program Committee and the local Committee on Arrangements for their help in pulling off what I think is one of the best sessions we have ever had. If you do better, Sir, you will have to go some.

DR. ANDERSON:

Fellow-members of the North Carolina Medical Society, I feel that I ought to say a word. I have been in the profession long enough to have seen about thirty-five presidents come and go, up to date. I remember when I joined the Society in 1889 at Elizabeth City, Bob Young, Cy Thompson, Gus Knox, and men of that age and type put their hands on my shoulders and bade me welcome to the work of the Society. I have had some honors at your hands, gentlemen, in being chairman of sections, member of the Board of Medical Examiners and, at one time, your orator. I have performed all these duties in a very insignificant way, but I appreciate all the honors, just the same. But, gentlemen, I want to speak sincerely in saying that, above all these honors, I appreciate most your love and support through these years. I am not unmindful that I would have failed partly in all my work had it not been for the love of friends who have ever stood by me. I said to a friend yesterday, when he was speaking well of my present work, that I was mindful of the fact that there were others perhaps more responsible for my success in life, whatever it may be, because of their active and faithful co-operation. Now, you have heard the President say that this meeting touches the high water mark in attendance, and he says that if we surpass this meeting at our next, we shall be going some. Well, I accept the challenge.

(Dr. McGougan: He still has his nerve.)

My dear friend, I deal in nerves. I deal in matters, now professional, that are very little known of by the general practitioner, but during the year it is my desire to better acquaint the doctors with these things by stressing my work. I want my friends to know about the different types of nervous and mental diseases and their needs.

I believe it is not only the privilege, but the duty of the president to really be a worker during his administration. I think I am well equipped, in the men associated with me, to do some work if I only had the time, but I shall try to make this a leading work and subordinate other interests to this. I feel that our Secretary is so well in harness in this work that he will be a great help, and I hope when we meet a year hence at Pinehurst to roll up at least six or eight hundred and have papers that will measure up to those that we have had here. To this end we shall work, and I ask your hearty co-opera-

tion and thank you for this great honor, for which I hope to thank you better through the service rendered during the year, because I am mindful of the fact that it is hardly time to boast when one puts on the harness. As the Good Book says, wait for the day when the harness is taken off to boast.

Dr. Chas. O'H. Laughinghouse, Greenville:

Times change, and men change with them. So do adages. The day has been when it was said from one reign to another "The king is dead. Long live the king." Such is not the case just at this particular time. The king is not dead. I want to do one thing that is not customary in this Society; I want to thank the retiring president for the work he has done. I myself have occupied his position once, and I know the labors attendant to such a responsibility and I know the duties that are imposed upon the man. He has made me very much ashamed of myself because he has done what I was delegated to do so much more thoroughly than it was possible for me to do it, simply because of the difference in men. I know the amount of time he has put on the work of this Society and I know the personal sacrifice it has meant to him. The successful laborer is worthy of evidences and tokens of appreciation from those he serves. It is for this reason that I want him to know that I, for one, deeply appreciate the tremendous effort he has put into the betterment and into the furtherance of the welfare of this Society, the profession of the State, and the people that are dependent upon that profession for their health and for their happiness.

Dr. Benj. J. Lawrence, Raleigh:

I want to thank Dr. Laughinghouse for what he has said for himself and for the rest of us. I am sure he expressed the feeling of every man in this room and of every member of this Society. I want to say that from the time Dr. McGougan was elected we fellows—I am speaking particularly of the younger men—began to see him and know him as our friend and counselor. As the President of the Society he inspired our confidence and love and won our respect and admiration. He knew Dr. Laughinghouse, Dr. McBrayer, Dr. Thompson, and the other men of that type. Already he could walk up to them and put his hand on their shoulders and take them into his confidence easily, but he also took the younger men into his confidence and made them feel at home. I want to ask that this Society rise as a token of appreciation and as seconding Dr. Laughinghouse's remarks.

A rising vote of thanks was extended to Dr. McGougan, the retiring President, after which the Society adjourned *sine die.*

MINUTES OF THE HOUSE OF DELEGATES

TUESDAY, APRIL 15, 2:00 P. M.

The House of Delegates was called to order by the Third Vice-President, Dr. D. A. Garrison, and the roll was called by the Secretary-Treasurer, Dr. L. B. McBrayer. The following delegates were present:

Alamance.....Dr. C. W. McPherson
Bertie.....Dr. L. B. Evans
Buncombe.....Dr. W. L. Dunn, C. V. Reynolds, M. L. Stevens, F. W. Griffith
Cabarrus.....Dr. P. R. MacFayden
Carteret.....Dr. K. P. B. Bonner
Cleveland.....Dr. E. B. Lattimore
Columbus.....Dr. Floyd Johnson
Cumberland.....Dr. K. G. Averitt
Durham-Orange.....Drs. B. W. Fassett, N. D. Bitting, W. R. Stanford
Edgecombe.....Dr. J. M. Baker
Gaston.....Drs. McG. Anders, D. A. Garrison
Granville.....Dr. G. T. Sikes
Greene.....Dr. W. W. Whittington
Guilford.....Drs. W. J. McAnally, W. F. Cole, W. M. Jones
Halifax.....Dr. L. J. Picot
Harnett.....Dr. W. P. Holt
Haywood.....Dr. J. R. McCracken
Henderson-Polk.....Dr. Guy Dixon
Hoke.....Dr. R. B. Wilkins
Iredell-Alexander.....Dr. T. E. Anderson
Lee.....Dr. J. P. Munroe
Lenoir.....Dr. J. M. Parrott
Lincoln.....Drs. J. R. Gamble, L. A. Crowell
McDowell.....Drs. J. F. Jones, G. S. Kirby
Mecklenburg (Delegates and Alternates) Drs. J. W. Gibbon, T. C. Bost, C. N. Peeler, A. G. Brenizer, Alonzo Myers, R. Z. Query, J. C. Montgomery, J. P. Matheson
Mitchell-Watauga.....Dr. C. A. Peterson
Moore.....Dr. J. S. Milliken
New Hanover.....Drs. J. G. Murphy, J. B. Sidbury
Northampton.....Dr. Carl P. Parker
Onslow.....Dr. Cyrus Thompson
Pamlico.....Dr. O. C. Daniels
Pasquotank-Camden-Dare.....Dr. H. D. Walker
Person.....Dr. B. E. Love
Pitt.....Drs. G. G. Dixon, Chas. O'H. Laughinghouse
Richmond.....Dr. W. D. James
Rockingham.....Dr. H. C. Taylor
Rowan.....Dr. H. H. Newman
Sampson.....Dr. E. T. Hollingsworth

Scotland.....Dr. Peter John
Stanly.....Dr. J. Clegg Hall
Surry.....Dr. J. B. Smith
Union.....Dr. S. A. Stevens
Vance.....Dr. H. A. Newell
Wake.....Drs. B. J. Lawrence, V. M. Hicks, W. S. Cozart
Warren.....Dr. G. H. Macon
Washington-Tyrrell.....Dr. J. L. Spruill
Wayne.....Dr. Wm. H. Smith
Wilkes.....Dr. J. W. White

The following message of the President was presented to the House of Delegates:

PRESIDENT'S MESSAGE

J. V. McGougan, M. D.

The sessions of the House of Delegates of the Medical Society of the State of North Carolina are becoming of greater and greater importance as our State, our profession and our society become more and more important.

Our Constitution and By-Laws never intended that the sessions of the House of Delegates should interfere with the scientific or other sessions, and Chapter IV, Section 1, of the By-Laws says in regard thereto "The House of Delegates shall meet . . . so as to give the members an opportunity to attend the scientific proceedings . . . ," and then the framers of our Constitution and By-Laws in 1903, looking forward to this good day, went on to say, "But if the business require, it may meet in advance . . . of the general meeting," etc.

I therefore recommend that until further ordered this House of Delegates hold its first session at each annual meeting on Monday, at eight P. M., immediately preceding the general meeting of the Society on Tuesday morning.

After discussion, action upon the recommendation of the President was deferred until the next annual meeting of the Society.

ANNUAL REPORT OF THE SECRETARY-TREASURER OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

The Secretary has notified all officers and committees and carried out all other instructions of the House of Delegates at its last meeting.

MEMBERSHIP

It is a pleasure to note that the membership last year reached the high water mark, being 1,592 against 1,571 for the year previous.

STATE LIBRARY FILE OF TRANSACTIONS

The file of Transactions with the State Library has been brought up to date.

PROGRAMS

A preliminary program has been mailed to every physician in the State. The programs are again printed by Southern Medicine and Surgery.

REDUCED RATES TO MEETINGS

On application of the Secretary last year the Southeastern Passenger Association, through Mr. W. H. Howard of Atlanta, granted a one and one-half fare rate on the certificate plan, provided as many as 250 bought tickets and took certificates therefor. There were less than 100 who presented their certificates and therefore the one and one-half fare did not obtain. On account of the few physicians presenting certificates last year it was thought unnecessary to ask for reduced rates to Raleigh.

DELINQUENT COUNTY SOCIETIES

The following counties have not made report or paid their dues for 1924 and are therefore not entitled to representation at this meeting: Alleghany, Ashe, Bladen, Brunswick, Currituck, Edgecombe, Gates, Graham, Greene, Hyde, Pender, Scotland, Swain, Transylvania, Union, Wayne, Yancey.

ERRORS IN COLLEGE OF GRADUATION OF FELLOWS

From time to time errors in regard to college and date of graduation of Fellows of this Society have crept into the records. We have depended upon the secretaries of the county societies to furnish the correct information. Other errors, however, may have been made on the part of the clerk copying the names and also on the part of the printer. I am sure the printer is responsible for some of it, because my record in the copy of Transactions is incorrect also. So the Secretary thinks it would be wise to send the roster of membership to the American Medical Association and get them to correct it and then hereafter check that against our records. In this way we feel that there will be no doubt as to the correctness of these records and we feel that they are sufficiently important to take any amount of trouble to have them correct. Another way would be to write each doctor and have him give us the information. That, however, would be more expensive, and then, too, many of the doctors would not answer our letters.

PAST PRESIDENT'S JEWEL

At the suggestion of Dr. J. Howell Way we had Arthur M. Field Company of Asheville prepare a die for a past president's jewel, the size of a quarter of a dollar, 14 karat gold, with the Seal of the Medical Society of the State of North Carolina on one side and the name of the past president and the year he served as president on the other side. It is arranged so that it can be worn as a watch charm. There is no expense to the Society entailed in this procedure and the matter of purchasing a jewel is entirely optional with the president or past president, though it occurs to me that it would be very nice for the Society to present one of these to the retiring president in the future. The matter has been presented to the past presidents and about twelve have agreed to take a jewel; perhaps others will do so. The die cost $65.00 and each jewel will cost about $16.25, but after the die is paid for, which the number that go in at this time will do, the cost will be only $9.75.

FINANCES

Report of the financial transactions of this office is appended hereto with certificate of balance on hand from the Page Trust Company showing deposits to the credit of the Medical Society of the State of North Carolina.

L. B. McBrayer, M. D., F. A. C. P.,
Secretary-Treasurer.

FINANCIAL STATEMENT

APRIL 14, 1923, TO APRIL 12, 1924

RECEIPTS

Balance April 14, 1923	$1,729.06
Borrowed from Page Trust Co. Nov. 12, to meet balance due printing transactions	1,300.00
Dues collected	3,948.00
Total receipts	$6,977.06

DISBURSEMENTS

Check No. 170—Dr. W. R. Parker, refund of dues	$ 3.00
Check No. 171—Void	
Check No. 172—Miss Mary Robinson, reporter	91.22
Check No. 173—Kenilworth Inn, board reporters	64.20
Check No. 174—American Railway Express Co.	2.79
Check No. 175—Western Union Telegraph Co., April account	3.19
Check No. 176—Southern Medicine and Surgery, programs	128.00

Check No. 177—Dr. J. W. Long, expense, certificates of merit	15.19	
Check No. 178—Miss Mary Robinson, reporter	79.45	
Check No. 179—Miss Hilda Jacobs, reporter	88.99	
Check No. 180—Dr. Elias Fulp, refund of dues	3.00	
Check No. 181—Dr. Wm. V. McCanless, refund of dues	3.00	
Check No. 182—Dr. M. D. Phillips, refund of dues	3.00	
Check No. 183—Dr. A. G. Jones, refund of dues	3.00	
Check No. 184—Miss Mary Robinson, reporter	100.00	
Check No. 185—American Railway Express Co., July account	.85	
Check No. 186—Bynum Printing Co., letterheads and envelopes	70.00	
Check No. 187—Miss Mary Robinson, reporter	12.00	
Check No. 188—Miss Amy Emanuel, reporter	129.78	
Check No. 189—Dr. L. B. McBrayer, salary Secretary-Treasurer	175.00	
Check No. 190—Western Union Telegraph Co., August account	1.40	
Check No. 191—N. C. Sanatorium, postage	125.00	
Check No. 192—Presbyterian Standard Pub. Co., Transactions, 1923	2,483.53	
Check No. 193—Page Trust Co., interest on $1,300, ninety days	17.96	
Check No. 194—Western Union Telegraph Co., Nov. account	1.32	
Check No. 195—N. C. Sanatorium, postage	2.23	
Check No. 196—Page Trust Co., credit on $1,300.00	1,000.00	
Check No. 197—Dr. N. B. Adams, refund of dues	1.00	
Check No. 198—Western Union Telegraph Co., February account	.70	
Check No. 199—Page Trust Co., $300.00 note	300.00	
Check No. 200—Page Trust Co., interest on notes	21.32	
Check No. 201—N. C. Sanatorium, postage	20.00	
Check No. 202—Capital Printing Co., 2,000 membership cards	8.43	
Check No. 203—Mr. A. W. Snow, clerical work	7.75	
Check No. 204—N. C. Sanatorium, postage	20.00	
Check No. 205—Edwards and Broughton, binding two volumes Transactions	15.00	
Check No. 206—Western Union Telegraph Co., March account	2.45	
Check No. 207—Dr. L. B. McBrayer, salary Secretary-Treasurer	200.00	
Check No. 208—Commercial Printing Co., envelopes	15.00	
Check No. 209—Dr. J. Clegg Hall, refund of dues	3.00	
Check No. 210—N. C. Sanatorium, telegram and clerical work	.91	
Check No. 211—American Railway Express Co.	1.39	
Check No. 212—N. C. Sanatorium, postage	41.86	
		$5,265.91
Balance 4-12-24		$1,711.15

Checks outstanding:

No. 182	$ 3.00	
No. 197	1.00	
No. 209	3.00	
No. 211	1.39	
No. 212	41.86	
		50.25
Balance Page Trust Co.		$1,761.40

DISTRIBUTION OF EXPENSES

Dues refunded, paid twice	$ 19.00
Postage, express, telegraph	223.59
Stationery, office supplies	123.62
Reporting Asheville meeting	565.64
Printing Transactions, 1923	2,483.53
Salary, Secretary-Treasurer	375.00
Clerical work	8.25
Program 1923	128.00
Interest on loan	39.28
Credit on $1,300.00 loan	1,300.00
	$5,265.91

PAGE TRUST COMPANY, ABERDEEN, N. C.

April 12, 1924.

Medical Society of the State of North Carolina,
Sanatorium, N. C.

Gentlemen:

This is to certify that you have today deposited with us the sum of $1,761.40, to bear interest from date at the rate of four percent per annum, as evidenced by our Certificate of Deposit No. 1454 of even date.

Very truly yours,

D. T. McKeithen, Cashier.

Upon motion of Dr. G. T. Sikes, the report of the Secretary-Treasurer was received and the financial report referred to the Committee on Finance.

The Secretary brought up the matter of amendments to the Constitution and By-Laws (Page 107, 1923 Transactions), action on which was deferred until Wednesday.

REPORT OF THE COMMITTEE TO CONSIDER THE FOUR-YEAR MEDICAL SCHOOL

I. W. Faison, M. D., Chairman

As the report of this committee I submit first, the following extract from a paper read by Dr. H. W. Chase, President of the University of North Carolina, before the Tristate Medical Association of the Carolinas and Virginia, in February, 1924, and a letter written by Dr. A. J. Crowell.

"In the three States included in this Association there are, as you know, five medical schools; the two in North Carolina being two-year schools. All these are Class A schools, and they enrolled in 1923 677 men, 190 of these being from States other than those in

which the schools are located, while on the other hand there are 497 men from these states enrolled as students in schools outside these three states, or a total of 984 students from the three states enrolled in the medical schools of the country. Only about 50 per cent, in other words, of students from these states are enrolled in medical schools in their own states. The figure is swollen, of course, by the fact that North Carolina maintains no four-year school. North Carolina, with its two two-year schools, attracts twelve men from other states, and enrolls in other states 260. South Carolina, with one four-year school, attracts six from other states, and registers in other states 89. Virginia, with two four-year schools, attracts 172 and loses 130. About one-eighteenth of the students enrolled in medical schools of the country are from the three states, which contain roughly just about the same proportion—that is, about one-eighteenth—of the country's population. On the other hand Virginia, with its two four-year schools, is the only one of these three states at present bearing its due share of the education of the medical schools from the three states.

In the proportion, too, of practicing physicians to population, the Carolinas are, with North Dakota, at the foot of the list of states. The figures for North Carolina are one physician to 1,133 population, and those for South Carolina are about the same. The situation in North Carolina is still further complicated by the fact that both its schools are two-year schools, and that it is altogether possible that, aside from difficulties that increasing enrollment in four-year schools all over the country will bring in locating men desiring to enter their third year from two-year schools, the two-year schools may, within the next fifteen or twenty years, find that the two-year school as an independent unit may cease to exist. At present there is a rather sharp separation between the laboratory instruction of the first two years and the clinical instruction of the second two; a separation that, however, is gradually becoming blurred and may sooner or later give away to a more unified type of curriculum in which clinical applications are taught along with laboratory work from the beginning. There seems to be a growing dissatisfaction with the present medical curriculum, and a growing tendency to move in precisely this direction. Should this tendency prevail, the two-year school without hospital facilities would be in the end as unable to maintain itself as was the old type of didactic school when the importance of hospital contacts came to be realized.

We at the University of North Carolina, keeping all these facts in mind, have felt that we should press for the expansion of the present two-year school into a four-year school at the earliest possible moment, and we propose to continue in our efforts toward this end. A territory which, like these three states, is caring for only half of its medical students in its own schools is certainly not overloaded with facilities for medical education, and should the two-year North Carolina schools some day be forced to discontinue, the situation will become very difficult.

To sum it all up, it seems clear that medical education has succeeded without undue disarrangement of conditions, considering the country as a whole, in placing itself on a basis which enables medical schools today to deal with a group of men with sufficient preliminary training to profit by thoroughly scientific methods of instruction in the modern sense of the term. It is now the medical curriculum itself, rather than standards, on which attention is becoming focused, and it is without doubt in this region that the next great advance in medical education is due to come."

"*Editor The News:*

I wish to applaud your editorial of Friday on 'The Lament of Dr. Chase' and endorse most heartily the sentiments you expressed. If it had not been for Dr. Chase we might have had the medical college which he has proved that we need. If it had not been for his decisive influence, subtly effected, the various groups of those who were advocating the establishment of such an institution might have been brought together in a common understanding and agreement. If it had not been that the University was bigger in his eyes than the interests of the state the whole question might have been settled. But, because he was a special pleader; because, as head of the University, he felt obliged to put the University first, he played both ends against the middle, dissuaded our cities from bidding for the location of the proposed college, and brought about the very situation which he is lamenting.

Chapel Hill is no place for a medical college. Nor, for that matter, is it any place for our University, only the University is there. If it were being built now, it would never be built there.

But a medical college is a different proposition. A book and a log with a professor at one end and a student at the other may make a university, but not a medical school. While the professor and his students are perambulating the academic groves the physician and his students must walk through rows of sick people.

Where would the clinical material come from if the college were located at Chapel Hill? It is not there and it would bankrupt the state to bring it in. Why not let doctors go to the sick instead of making the sick go to the doctors? Why inconvenience the whole state to add another leaf to the laurel crown of the University?

Dr. Chase is a great man, but he might be greater. He has had a vision, but it is blurred.

A. J. Crowell, M. D."

The facts brought out by Dr. Chase are true and fall sadly upon the ears of the medical men in North Carolina, that do heartily deserve better things. I was born an optimist and am one now; still I am a pessimist in this matter when the facts concerning this medical school are as stated in my hearing within the two past years, and when Dr. Chase, the Trustees of the University, and men in our profession are so blindly tied to the undying sentiment thus inculcated in them while at the University (a laudable loyalty, I admit). Who,

in the face of all arguments which are stated so well in Dr. Crowell's letter, and which I endorse, will insist on this medical school being located at Chapel Hill? I really can see nothing promising for this school. I have heard men in our profession so blinded as to say, "Yes, build it at Chapel Hill if it fails and rots in decay." Tax payers in North Carolina I hope and believe will never act so unwisely. I want a school. I want it located at the place best suited for a great school, equipped and manned by men, even paid men, by the state, who can cope with men in any school, and who can and will draw men from other states. My time in life forbids me to allow my optimism to hope for this, still I shall hope.

With this report, I shall ask that my committee be discharged.

The report was accepted and the committee discharged.

REPORT OF COMMITTEE ON AUTOMOBILE INSURANCE

Dr. J. T. Burrus, Chairman, stated that the committee had heard nothing further from Mr. G. H. Winfrey, Secretary of the Medical Society of Virginia, who presented this matter at the last annual meeting, and therefore had no report to make.

The report was accepted and the committee discharged.

COMMITTEE ON PUBLIC POLICY AND LEGISLATION

At the request of Dr. K. P. B. Bonner, Chairman, the report of the Committee on Public Policy and Legislation was deferred until Wednesday.

REPORT OF COMMITTEE ON PUBLICATION

The Chairman, Dr. McBrayer, reported that the committee had been able to reduce again, as it had for the last two years, the price of printing the transactions. The 1923 transactions were printed in Charlotte.

The report was accepted.

REPORT OF DELEGATES TO AMERICAN MEDICAL ASSOCIATION

Dr. M. L. Stevens stated that North Carolina was one of the few states to have its full delegation present at the last meeting of the American Medical Association, having full representation in the House of Delegates at that time.

The report was accepted.

The Chairman read the following telegram received by the President from Dr. D. T. Tayloe, of Washington:

"Too sick to attend meeting. Am with you in spirit. Best wishes for a successful and progressive meeting."

Upon motion of Dr. Charles O'H. Laughinghouse, seconded by Dr. Cyrus Thompson, the House of Delegates by a unanimous vote instructed the Secretary to send a telegram of sympathy and love to Past President D. T. Tayloe and to Past President M. H. Fletcher, of Asheville. The Secretary sent the following telegrams:

"Dr. D. T. Tayloe,
Washington, N. C.

The Medical Society of the State of North Carolina sends greetings and love; regrets your absence; hopes for your speedy recovery.

(Signed) L. B. McBrayer, Secretary."

"Dr. M. H. Fletcher,
Asheville, N. C.

The Medical Society of the State of North Carolina misses you greatly, loves you much, and hopes for an early recovery.

(Signed) L. B. McBrayer, Secretary."

NOMINATING COMMITTEE

The following delegates were elected as members of the Nominating Committee:

First District	Dr. H. D. Walker
Second District	Dr. Charles O'H. Laughinghouse
Third District	Dr. Cyrus Thompson
Fourth District	Dr. G. S. Coleman
Fifth District	Dr. W. D. James
Sixth District	Dr. B. J. Lawrence
Seventh District	Dr. Z. K. Justice
Eighth District	Dr. J. T. Taylor
Ninth District	Dr. H. H. Newman
Tenth District	Dr. Carl V. Reynolds

The House of Delegates then adjourned.

WEDNESDAY, APRIL 16, 2:00 P. M.

The House of Delegates was called to order by the Second Vice President.

The Secretary read the report of the Committee on Recommendations of the President to the House of Delegates (1923), which at that meeting was laid on the table for one year. (1923 Transactions, pages 107-108.)

Dr. G. T. Sikes moved that the recommendations made therein be indorsed. Dr. Cyrus Thompson submitted an amendment directing that they be submitted, for consideration, to a committee to be appointed by the President to revise the By-Laws and report to the 1925 meeting of the House of Delegates. The amendment was accepted by Dr. Sikes, and the amended motion was seconded and carried. Upon motion of Dr. L. B. McBrayer, the President appointed the 1923 Committee on Recommendations of the President as the new Committee on Constitution and By-Laws, being composed of the following members:

DR. C. M. VAN POOLE, *Chairman*
DR. D. A. GARRISON
DR. PAUL H. RINGER
DR. H. M. S. CASON
DR. C. W. BANNER, *Secretary*

REPORT OF COMMITTEE ON PUBLIC POLICY AND LEGISLATION

DR. K. P. B. BONNER, CHAIRMAN

Owing to the fact that the General Assembly did not meet this year there is no legislation to report.

Since the last meeting the committee has exerted its influence in attempting to secure the reduction of the narcotic tax by the United States Senate. This reduction is indorsed by the American Medical Association. When the Harrison Anti-Narcotic law was passed a license tax of one dollar was levied, with the idea of making the act constitutional, and this tax during the war was raised to three dollars, to provide revenue. It is unwise, unjust, and, in fact, unconstitutional to continue to levy this tax, which not only furnishes the money for carrying out the act but also gives a substantial income to the government. It is taxing the few for the benefit of the many. We are therefore trying to secure the enactment of a bill to reduce the tax from three dollars to one dollar, having written our two Senators to voice the protest of the physicians of North Carolina against continuing the larger tax.

I think there is no question that there will be some far reaching developments in the coming General Assembly, and we therefore feel that it is highly important that the medical profession should be

represented in both branches of the General Assembly by representative men of the profession, as there seem to be very bright prospects for trouble. We should have at least eight or ten representatives of the profession there. As a matter of fact, it is the easiest matter in the world to introduce a bill that, by title, is the most innocent bill conceivable and railroad it through, only to find later that you have a most undesirable law.

The last matter to be called to your attention is one which we wish to lay before you without prejudice. The Wilson County Medical Society, as the result of a recent happening in that county, has gone on record as asking the General Assembly to make the present marriage law stronger. They wish to have a provision inserted requiring a physician who examines an applicant and rejects him to report the matter of the rejection to the register of deeds. This we lay before you without prejudice.

The report was accepted, upon motion of Dr. Charles O'H. Laughinghouse.

Dr. G. T. Sikes moved that the Committee on Public Policy and Legislation be instructed to endeavor to secure such changes in the law as they deem fit and proper. Motion seconded and carried.

Dr. G. H. Macon moved that the Committee on Public Policy and Legislation be instructed to consider all phases of the necessity for alcohol or whiskey in the practice of medicine, and, if it is indicated, endeavor to have a bill passed making it possible for physicians to secure whiskey in cases of absolute necessity. Seconded by Dr. Cyrus Thompson. Upon motion of Dr. L. B. Evans, Dr. Macon's motion was tabled.

REPORT OF COUNCIL

The full Board of Councilors desires to report to the House of Delegates as follows:

The Board of Councilors of the Medical Society of the State of North Carolina, being in session at the Sir Walter Raleigh Hotel, April 15, 1924, 3 p. m., the President announced that Dr. Carl V. Reynolds had been appointed to fill out the unexpired term of Dr. Eugene B. Glenn, deceased, as councilor of the tenth district.

On motion Dr. Carl V. Reynolds was made chairman.

Dr. A. McN. Blair addressed the councilors, suggesting that our first meeting be one of special tribute to our departed councilor and chairman, Dr. Eugene B. Glenn, and that the councilors stand in silence for a few minutes out of respect to Dr. Glenn's memory, which was done.

On motion of Dr. C. M. Van Poole, councilor for the ninth district, seconded by Dr. H. D. Walker, councilor for the first district, the following resolutions were unanimously adopted:

Resolved: That in the death of Dr. Eugene B. Glenn the Board of Councilors of the Medical Society of the State of North Carolina has lost a most loyal, dependable, and energetic member, whose labors were ever directed to raising and maintaining the standard and sustaining the honor of the profession of the state and in promoting the welfare of the Society.

His unsullied name, high integrity, and superior professional skill, his noble character and unselfish faithfulness in his chosen profession, make him an example well worthy to be emulated by the profession.

Resolved: That a copy of these resolutions be incorporated in the report of the Board of Councilors to the Society at this meeting, and a copy be sent to the family of the deceased.

REPORTS OF COUNCILORS

First District—Dr. H. D. Walker, Elizabeth City, Councilor.

The First District Medical Society met at Elizabeth City, March 20, 1924. In the afternoon a clinic was given at the hospital. At seven o'clock the Society met at the Southern Hotel and after a banquet, given by the local Society, the meeting was called to order by the President, Dr. H. M. S. Cason, of Edenton. The address of the evening was a historical paper, "Early History of Medicine and Surgery," by Dr. G. E. Newby of Hertford. Several members reported cases and the discussion was interesting and instructive.

The next meeting will be at Hertford in October. Dr. G. E. Newby, Hertford, President; Dr. W. A. Hoggard, Woodville, Secretary and Treasurer.

No report from Second, Third and Fourth Districts.

Fifth District—Dr. A. McN. Blair, Southern Pines, Councilor.

The Fifth District Medical Society is an active energetic organization, which holds regular sessions twice a year.

The summer meeting was held August 17, 1923, at the State Sanatorium for the Treatment of Tuberculosis, Sanatorium, N. C. The Society were guests of the sanatorium staff. This was an exceptionally fine meeting, both from a scientific and gastronomic standpoint. Our genial hosts supplied watermelons, along with a substantial repast, which is the staff's usual way of proving their good fellowship.

The winter meeting was held in January, 1924, at Sanford, and we were honored by the presence of our President, Dr. McGougan. In spite of inclement weather there was a goodly attendance at this meeting. The Society was entertained by the Sanford physicians and the Lee County Medical Society. The ladies of Sanford furnished a bountiful luncheon. A scientific program of unusual in-

terest was carried out that proved the value of carefully written papers to make men talk and get together.

The following resolutions were passed:

Resolved: That we, the members of the Fifth District Medical Society, in convention assembled at Sanford, N. C., this 24th day of January, 1924, wish to express our sincere regrets at the retirement of Dr. L. B. McBrayer as superintendent of the State Sanatorium for Tuberculosis, at Sanatorium, N. C., and to say that we have confidence in his integrity and honesty of purpose and that we consider him a high class Christian gentleman and an honored member of our profession. Living in our midst and having spent the best of his life in developing our tuberculosis sanatorium, we have a better opportunity to know him and the difficulties and dangers under which he has labored than his critics, and we feel that, while the buildings are about completed and the designs for the grounds are, so to speak, on the trestle board, and the general scheme for a sanatorium for North Carolina second to none in the country, it is little short of tragic that his relations should be severed at this time.

Resolved Further, that a copy of these resolutions be spread upon our minutes, that a copy be sent to Dr. McBrayer, and that a copy be sent to the Board of Trustees, whose expressions of kindness and consideration in this matter we heartily endorse and appreciate.

As to each of the component county societies of the district, there is nothing unusual. We are a peaceful people and dislike the notoriety that goes with dissensions.

But when the opportunity again offers itself to entertain the State Medical Society at Pinehurst, it is then that the Fifth District is better able to show its true form—a solid working unit, each man and his county society to the fore. For has it not been said truthfully, "By their fruits shall ye know them"?

Sixth District—Dr. J. M. Templeton, Cary, Councilor.

Organized medicine in the Sixth District is in a healthy condition, with practically all the counties organized. The District meeting at Henderson was one of the finest ever held; the attendance large; papers and addresses of high order, instructive and up-to-date. This annual meeting is fast becoming the most important feature of the profession in this district. With one or two exceptions the work is harmonious and the profession progressive.

No reports from Seventh and Eighth Districts.

Ninth District—Dr. C. M. Van Poole, Salisbury, Councilor.

In the Ninth District everything is in good working condition. The best society meeting in the history of the district was held in Statesville the last Tuesday in October. A record breaking attendance was present. A number of excellent papers were read and fully discussed.

Dr. M. R. Adams of Statesville was elected President and Dr. James W. Davis, also of Statesville, Secretary.

It is true that some of the mountain counties are not organized and therefore have no county society, but it is hoped that they may yet see the need of organizing and thus reap the benefits of society work.

There have been no disturbances in the district, the councilor not having been called upon to adjust any matters of dispute.

The next meeting of the district society will be held in Salisbury the last Tuesday in October of this year.

Tenth District.

The Secretary announced that Dr. Eugene B. Glenn, Councilor for the Tenth District, died a few weeks before this meeting.

REPORT OF NOMINATING COMMITTEE

The report of the Nominating Committee was called for and the Chairman, Dr. Laughinghouse, announced that it would be presented by the secretary of the committee, Dr. Lawrence.

The report follows.

OFFICERS 1924-1925

President	Dr. Albert Anderson	Raleigh
First Vice-President	Dr. W. L. Dunn	Asheville
Second Vice-President	Dr. A. E. Bell	Mooresville
Third Vice-President	Dr. K. G. Averitt	Cedar Creek
Secretary-Treasurer	Dr. L. B. McBrayer	Sanatorium

COUNCILORS

First District	Dr. H. D. Walker	Elizabeth City
Second District	Dr. Grady G. Dixon	Ayden
Third District	Dr. E. J. Wood	Wilmington
Fourth District	Dr. J. C. Grady	Kenly
Fifth District	Dr. W. A. Monroe	Sanford
Sixth District	Dr. V. M. Hicks	Raleigh
Seventh District	Dr. T. C. Bost	Charlotte
Eighth District	Dr. W. F. Cole	Greensboro
Ninth District	Dr. M. R. Adams	Statesville
Tenth District	Dr. W. J. Hunnicutt	Asheville

COMMITTEE ON PUBLICATION

Dr. L. B. McBrayer, *Chairman*, Sanatorium

Dr. H. C. Brockmann, High Point Dr. M. L. Townsend, Charlotte

COMMITTEE ON OBITUARIES

Dr. A. W. Knox, *Chairman*, Raleigh
Dr. C. F. Strosnider, Goldsboro Dr. F. L. Siler, Franklin

COMMITTEE ON PUBLIC POLICY AND LEGISLATION

Dr. W. A. Monroe, *Chairman*, Sanford
Dr. K. P. B. Bonner, Raleigh Dr. A. A. Kent, Lenoir

COMMITTEE ON FINANCE

Dr. A. C. Everett, *Chairman*, Rockingham
Dr. W. C. Ashworth, Greensboro Dr. W. F. Hargrove, Kinston

DELEGATE TO AMERICAN MEDICAL ASSOCIATION

Dr. M. L. Stevens, Asheville Dr. J. Q. Myers, Charlotte, Alternate

DELEGATES TO MEDICAL SOCIETY OF VIRGINIA

Dr. Floyd Wooten, Kinston Dr. E. C. Boyce, Rocky Mount
Dr. W. W. Green, Tardoro Dr. J. C. Sherrill, Statesville
L. G. Beall, Black Mountain

DELEGATES TO MEDICAL SOCIETY OF SOUTH CAROLINA

Dr. J. O. McClellan, Maxton Dr. Joseph Nobles, Greenville
Dr. J. B. Sidbury, Wilmington Dr. J. D. Benbow, Winston-Salem

PLACE OF MEETING, 1925—PINEHURST

COMMITTEE ON ARRANGEMENTS

Chairman, Dr. W. C. Mudgett, Southern Pines

The report of the committee was adopted.

The report of the Committee on Public Health Administration was called for at this time. The Chairman, Dr. J. Howell Way, being absent, Dr. Laughinghouse moved that the report be read by title and be filed with the secretary for publication, which motion was carried.

REPORT OF COMMITTEE ON PUBLIC HEALTH ADMINISTRATION

Your committee refers to the highly important, progressive, and commendable position which was taken by the North Carolina State

Medical Society in its annual meeting last year as recorded on pages 90, 91, and 92 of the Transactions. The society has clearly stated in the above reference its judgment as to (1) what it considers the terms State Medicine to include and (2) what its public attitude toward State Medicine is. The action taken last year was one of passive approval rather than one of active participation. The interests and responsibilities of the medical profession with reference to public health problems extend far beyond a recognition of the problem and an assent to certain proposed solutions.

Private medicine has a paternal interest in public medicine. Private medicine is the parent trunk and public medicine is an offshoot and there cannot be any separation without fatal injury to both. Again, private medicine is bound to public medicine by all the moral obligations of citizenship. Professional training does not relieve one of civic obligations, but rather tends to enlarge one's civic vision and opportunities and responsibilities. "Unto whom much is given, much will be required." The prime responsibility, therefore, for initiation of action directed to the improvement of the public health rests with the medical profession. The Committee believes that it is the duty and the high privilege of every county medical society to organize within itself, without further delay, a strong, active committee on public health policy, and to see to it that such a committee defines the county public health problems, submits reasonable solutions for dealing with them, and actively and persistently engages itself in setting up and supervising within the county such agency or agencies as are necessary to bring about the greatest possible prevention of disease and the largest possible promotion of the public health. To this end, your Committee submits for your consideration and action the following resolution:

Resolved: That it is the sense of the North Carolina State Medical Society that every constituent county medical society should organize a committee on public health policy and direct such committee, without unnecessary delay, to perform the following duties: (1) To prepare a statement defining, with the highest possible degree of exactness, what are the public health problems of the county, and when such definitions have been acted upon by the local society to record and to publish the position of the county society with respect to these local health problems. (2) To give such thought, to make such contacts, and to hold such conferences with reference to finding the best possible solutions for such local health problems as are recognized as present-day experience and practice warrant. (3) To persistently press, through such means and agencies as are available in the county, for such provisions in the form of appropriations

and personnel as are needed to arrive at the proper solutions of their local health problems.

J. Howell Way,
President N. C. State Board Health
L. N. Glenn, *President*
N. C. State Board Medical Examiners
L. A. Crowell, *President*
N. C. State Hospital Association

The House of Delegates then adjourned *sine die.*

SCIENTIFIC PAPERS

NORTH CAROLINA SECTION OF MEDICAL VETERANS AND MEDICAL OFFICERS' RESERVE CORPS, U. S. A.

SECTION ON SURGERY

SYMPOSIUM ON CONGENITAL PYLORIC STENOSIS AND GASTRIC AND DUODENAL ULCER.

SECTION ON CHEMISTRY, MATERIA MEDICA AND THERAPEUTICS

SECTION ON PEDIATRICS

SECTION ON PRACTICE OF MEDICINE

SECTION ON PUBLIC HEALTH AND EDUCATION.

SECTION ON EYE, EAR, NOSE AND THROAT

SECTION ON GYNECOLOGY AND OBSTETRICS

SECTION OF NORTH CAROLINA MEDICAL VETERANS AND MEDICAL OFFICERS RESERVE CORPS, U. S. A.

CHAS. O'H. LAUGHINGHOUSE, CHAIRMAN, GREENVILLE

HIGH REJECTION RATE FOR NORTH CAROLINA BOYS AS SEEN AT FORT BRAGG

GENERAL A. J. BOWLEY, COMMANDER, FORT BRAGG

I have been very much interested in the great number of rejections that have taken place there at Fort Bragg of men who have applied for enlistment, and the result was that I told Dr. McGougan about it and he asked me to present just a little bit of data to you. I am going to read to you a portion of this paper which was prepared by one of my medical officers, and go right to the facts themselves.

From January to December of 1923 there were examined 1,333 men, of whom 789 were accepted and 544 rejected, making the percentage of rejections, roughly speaking, 40%. Rejections varied from month to month, from 50% plus in one month to 20% plus in another. If there have been any errors or oversights they have generally been in favor of the applicant, for the examiner is guided by regulations as to causes for rejections and can not act on his own personal opinion as to suitability or non-suitability for service. Bear in mind that our physical requirements are not much above those required of an applicant for a $1,000.00 life insurance policy.

We need men in the army very greatly. The result is our doctors have been very careful to accept any men they could get who could possibly pass the physical standards. There has been a tendency not to be too strict; that is, within the regulations and no more. So you must not get the idea at all that medical officers are rejecting men who are up to standard and have some slight defect. They have been very generous indeed and have done everything they could to help us get recruits.

Among the most numerous causes for rejection is heart disease and its complications, of which there were 118 cases, not including 14 cases of abnormally rapid heart, many of which were accompanied by poor physique, underweight and lung trouble.

I might state in this connection that I have been after the doctors on a number of occasions, because our recruiting officers claimed that they were cranks on the subject of heart. I have been down there with them, worked with them to see what they are doing, and I am with the medical officers completely, for what is the use of taking a man in the service who has a weak heart and is liable to be thrown on the Government at any time? They are exactly right in what they are doing.

The next most frequent cause was albumin in the urine, of which there were 39 cases. Such cases are examined at least for six consecutive days and longer if deemed necessary. Chronic ear disease and deafness was the next most frequent cause, being 30 in number. Underweight, 19 cases.

In the underweight cases, we have sent men who were likely prospects to some of the organizations, who have taken care of them for two weeks and stuffed them like hogs and sent them back for re-examination, and we have then taken them in. I might state in this connection that a man, as a rule, gains anywhere from ten to twenty pounds in three months after his enlistment. They always pick up, as a rule.

Flat-foot of varying degrees—this means with symptoms which would unfit them for our service—is represented by 18 cases. Hernia, joint deformities due to old injuries and rheumatism, poor physique, are also included in sufficient numbers to make them conspicious in our list. Tuberculosis is represented by 8 cases. For the rest, we may mention defective vision and eye diseases, 30 cases, of which 7 were trachoma. The other causes were among the cases which are fairly common and, if not disqualifying at the time, likely to become so within a short time.

Please fix in your mind, also, that what we have reference to here is the youth of the state, the men who should be the doers and creators of new wealth and thought; perhaps the directors of the community for the next generation and a half, at least. The percentages we have mentioned do not take into account the applicants for enlistment who are rejected by military personnel who know nothing of medical science; that is, the defects in such persons are so apparent that the ordinary layman may discover them.

I am not going into the discussion of this evidence, but there are the facts, that nearly forty per cent of the men who are applying to us for enlistment in the army from this state are rejected because of physical disability. It seems to me that it is something that should attract very decidedly the attention of the medical profession, and something you gentlemen in your section should give special attention to, because you are interested in developing people who will be of use to the country in time of war. What should be done is something for you gentlemen to discuss. I look these men over frequently. I see the change that comes over men who enter the service. We get very few big, robust men from this part of the country. As a rule, the men who come to us seem to be under-fed and under-nourished. The regular, steady, wholesome diet we give them invariably puts the men in splendid shape in a short time. You can see the improvement after they have been in a month. These others that have been rejected, they go into your communities and are there, to a very great extent, a menace, because they are not ones who can do real labor. They are bound to break down and be a burden on their own families and the community. It seems to me that this body of medical men should think over this subject just a little bit and figure as to what steps should

be taken to buck up the youth of the state, with a view to improvement in general health and conditions.

If there is anything you want to ask me, I am on the witness stand and will do the best I can. Professionally, I can give you no technical information, but from a layman's standpoint, and that of a keen observer of the men, I will be glad to give you any information I can.

QUESTION: How does the percentage of rejection compare with the experience in other states?

GENERAL BOWLEY: I can't speak offhand, but I think, approximately, we are a little higher here in rejections than in other states, which leads me to believe that something is radically wrong with the youth of the state. Personally, I think a very great deal of it is due to years, you might say, of generations of malnutrition. You can take great sections and find people who don't live up to the standard, as far as health is concerned. I think it is a general run-down condition of the people, showing in the youths. It seems to me there should be a strong effort made to teach the people outside, especially in the country and factory districts, proper sanitation, proper bathing, proper care around their homes, and especially proper diet. The people of this country, in my opinion, do not live as they should. In their diet there is too much grease, too much fat pork, too much corn pone that is fried, and practically no vegetables of any kind. It is my opinion that much can be gained by improving conditions of sanitation and diet, teaching the people to bathe, take care of their bodies, look after themselves. You see, these rejections are only ones from selected men. They do not include all of those who are rejected by recruiting sergeants, who simply as laymen look at a man and say he is not fit for service and refuse to take him. After that squad has been eliminated, the medical officers rejected about forty per cent of the remainder.

DISCUSSION

DR. J. HOWELL WAY, Waynesville: I think you are correct as to one of the causes, but it occurs to me, gentlemen, as a medical man, that a group of this kind would have a higher incidence of tuberculosis than of heart disease. There is a higher incidence of heart disease there. Of course, we look first to focal infection as a cause of that, but there is another cause, in my judgment, that is widespread generally, and that is the use of tobacco by children. My observation and experience teaches me there are more weak hearts, and more of my patients suffering from typhoid fever and acute diseases, who have used tobacco in their youth, die, than from any other cause, when they ought to get well.

THE CHAIRMAN: How about the mental standard of these men who are rejected? Do you know whether or not they are substandard otherwise?

GENERAL BOWLEY: I should say that these men are of the average mental standard of the ones we accept. They are men we are

trying to get and I would say they don't vary greatly from those we accept for the army.

THE CHAIRMAN: I was asking that for the reason that the thought came into my mind that just at this day and time most of the young men have been fed up on war; that maybe just the flotsam and jetsam were applying for positions in the army.

GENERAL BOWLEY: I don't think that is the case. For instance, I have a detachment, four sections of horse artillery, touring the state now, getting recruits. They sent in twelve recruits the first day, all from one section, from right around this particular section, I think. Six out of twelve were rejected, and that is the way they run. Some of them are town boys and a great many farmer boys, who have average education and, to all appearance, are fine looking chaps, but they fail to come up to scratch. As to the great number of heart cases, whether it is tobacco or not I cannot state.

DR. WAY: I am sure we are all very much indebted to the Commanding Officer of our great Carolina camp, Bragg, for his presence, and for the language of good cheer that he brings us this morning. In regard to his forty per cent rejections. I think, gentlemen, that that is very close to the average rejections by the Draft Board during the days when we were raising the four million. That, as I remember, was about thirty-eight per cent. I was wondering, as Colonel Laughinhouse said just now, if most of the young men being fed up on war hadn't resulted in perhaps a slighter, substandard class of men physically and intellectually applying for places in the army now than was the general average during the war days, and yet my experience for the past three and a half years as medical officer in connection with the training center for disabled war veterans at Waynesville, N. C., would lead me to believe that that is probably not so. Of the 271 men I had on our roll last week, I had about seven men who had been admitted to the army since the close of the war. I expect that the army, gentlemen, is getting just about the average of the population; in other words, just about as good and just about as bad as we have, and we doctors understand the causes of these things better than we are able to furnish remedies. Gentlemen, it would take a generation to change that condition. Nevertheless, we ought to be sounding a warning all along down the line, and I want to impress it upon the state. I am sure the State Board of Health will take up your remarks here today and make them the basis of something that will be good for both the people and best service of the state in general. It is a note along the right line. We have too many physical, mental and moral defectives. In the days of 1917 to 1919, notwithstanding the letters the boys wrote back home about "starving," "nothing to eat but hardtack," etc., yet they gained; and even the sick men, in 1918 weighed more when discharged from hospital than when inducted into service. I asked my surgeons

to keep a record and weigh each outgoing man from the reconstruction service and check his weight back. They weighed on an average slightly more than four and a half pounds more than they did when they went into the Army, showing that after all, gentlemen, with all due respect to the other good places in this land, about the finest place I know of in this country is in the Army of the United States. I left it with that feeling—tho' I didn't leave it; I am in the Reserve Corps yet! I used to say that the war would be worth every cent it cost if the lessons in hygiene, sanitation and physical care that the average man learned would be carried back home.

Personally I believe, and I talk it whenever I have an opportunity, that if this country had a system of universal military training, if every boy before he attains his majority had one or two or three experiences of just two weeks vacation in a military camp, he would be taught some lessons in personal hygiene, in carriage, in standing up and looking his fellow man in the face, that would be worth every cent that it cost the government. They say we are trying to Germanize, trying to militarize the nation. We doctors know better. We know that universal military training is a move in the right direction. If the average young man had that experience of training in military life before he comes of age, a tremendous step would be taken in the direction of the physical betterment of the state, and it would be worth every cent it cost the Federal Government.

Dr. Wm. LeRoy Dunn, Asheville: I think we can promise the General that it will not take a generation to change some of these things. The President of our State Board of Health has been, I think, a little too modest. It will not require a generation for the percentage of heart disease among the applicants to diminish, and as for the malnutrition among these men, I think we can promise you, with a fair degree of certainty, that that will be greatly improved. As has already been referred to here, we know that focal infections, such as diseased teeth and diseased tonsils, are the most common causes of our heart lesions. Today the State Board of Health is looking after the teeth and the tonsils of our school children; in addition to this we have volunteer organizations, like the National and local Tuberculosis Associations, which are conducting nutritional clinics in our schools. It will take possibly ten years for this work to bear fruit and become manifest among your applicants, but I am sure, as a result of the corrected teeth, the corrected tonsils and the improved nutrition, that we can promise you a much smaller incidence of heart disease and of many deformities in a period less than fifteen years.

Dr. Way: I don't think we had better delude ourselves that we are as well off as other people. If the conditions are such as General Bowley tells us in peace times, they are hardly comparable to the war, when it was a dragnet that took in all kinds of people. Here is a case where men are first examined by sergeants and then by medical officers who know about it, and still the percentage

is as high as it was when the whole country was raked and dragged for men. I think we had better get busy and see what is the matter, and I still insist that focal infections and tobacco don't cover the whole thing. There are a lot of things that come in.

General Bowley: There is nothing I can say except this. The Colonel was good enough to mention universal service and the possibility of everyone receiving a certain amount of training. I am thoroughly in accord wth such views. I invite attention to the fact that we offer the youth of this state an opportunity to attend the Citizens Military Training Camp during the summer, one month of training. We have got exactly what they need in the way of physical development that would aid them very materially, training in sanitation, hygiene, and so on. Yet this state is below its quota for its delegation to the Citizens Military Training Camp. This is in the heart of the family. These are facts and we should look into them. The point is we are now getting a higher percentage of rejections of North Carolinians than we get in other states. Next, we are well below our quota in this Corps area for the Citizens Training Camp. We would be very glad indeed to have you medical officers assist us along both lines. We want better men and more men. I will leave the problem in your hands.

The Chairman: With your permission, I will take the privilege of thanking General Bowley for bringing this to us, and ask for co-operation between him and those he represents and the North Carolina Board of Health. After all, the thing resolves itself down to individual and personal hygiene—teaching the mothers to give their children more milk, popularizing the pasteurizing of milk, and getting the proper sort of food to children who are being born every day. That is the whole story, and if General Bowley can give a boost to what the North Carolina Medical profession and the North Carolina State Board of Health is doing in that way, he could do more than in any other way.

General Bowley, closing the discussion: I might state that when we came to Camp Bragg three years ago we didn't have any milk in that community at all. Most of the children were being brought up on Klim. I am not a doctor, and a mere bachelor, but I knew children should have milk. I succeeded in transferring some registered cattle from Camp Pike and Camp Jackson, which started the nucleus. They turn out the best milk you can find anywhere. It is only for our own garrison, and it is at a price that started out seven cents a quart less than what the outside community is paying for it. We are working along these lines. We are likewise developing the post vegetable gardens for our garrison. We watch very carefully the diet of the men. As a rather keen observer of conditions in the state, I know exactly what you are doing in developing public health of the state. I admire it greatly. I haven't overlooked the fact that your people in the schools are teaching the children how to eat. The gain has been tremendous, but on the other hand I am a bit impatient of these things, and therefore deemed it advisable

to bring this matter to your attention. It has been a very great pleasure to be with you.

OUR RELATIONSHIP TO THE DISABLED EX-SERVICE MEN OF THE STATE

I. Thurman Mann, M. D., National Vice-Commander American Legion, High Point

Among the ninety-nine thousand men from North Carolina who served with the armed forces of this country during the World War it is estimated that there are ten thousand who are now suffering from some disability incurred while in the service, or from an aggravation of some condition which existed prior to their enlistment but which did not disqualify them from participation in the war. These figures may seem large to you but when you consider that large numbers of our boys overseas were in the Thirtieth and Eighty-first Divisions; which divisions saw long and extremely severe service at the front with the resulting exposure to explosives and gas; and consider the ravages of the influenza epidemic in the camps on this side it is not so surprising after all.

The majority of these men upon their return to their homes again resumed their peace time vocations. Under industrial conditions very dissimilar to army life and under the stress and strain of providing for themselves and often dependents, lungs that had not fully recovered from the effects of gas or influenza or overexposure in the trenches began to break down and give trouble. Wounds that had apparently healed began to pain. Hearts and kidneys which had been overworked, abused and neglected in the stress of warfare, in the calmer days of peace began to give considerable discomfort. Nerves and brains that had functioned under the stimulation and excitement of those days in the readjustment could not be brought back to normal.

To whom did these men turn when they discovered—often too late—that physically they were not what they were when they left home? To the physicians of the state and in a large percent of the cases to one who was also in the service. Here he often found sympathy, understanding and a desire to help. Sad to relate often he was given the same classic "C. C. pill, painted with iodine and marked Duty" treatment accorded him by some Medic in the army. In other words scant attention, no sympathy and less help.

Following the war there were several agencies in Washington presuming to handle claims of disabled men against the government and practically getting nothing accomplished. The American Legion, realizing that such a state of affairs could not exist longer urged the formation of one large central government agency for the handling of these claims for aid. Following several conferences between government officials and Legion heads the United States

Veterans Bureau was formed. This bureau to handle all claims for compensation, vocational training, insurance, hospitalization, etc.

This Bureau, for the information of the few who may not know, is comprised of a central office in Washington, fourteen regional or district offices at central points over the United States and one or more sub-district offices in each state. It is not my intention in this paper to go into the workings of the Veterans Bureau but rather to show how we can be of vital benefit to our disabled Buddies.

In filing a claim for hospitalization or compensation it is necessary that the claimant have such evidence presented to the bureau that will prove his service in the war, that he is in need of aid, proof from comrades that he was wounded or ill while in the service, affidavits from employers and friends to the effect that his physical condition is not up to par and probably the most important evidence he must present is a statement from the physician or physicians who have treated or examined him since his discharge. Competent medical evidence in the form of properly drawn affidavits has been the deciding factor in the prompt and satisfactory adjudication of more claims than all other evidence on file with the bureau. For example—when the file containing the claimant's evidence presented in support of his claim is reviewed, after reading his own sworn statement and the certified copy of his discharge, the medical affidavits are next scrutinized carefully. If your affidavit shows that upon a certain date you examined this man and found certain physical conditions (going into brief detail) and chain of symptoms and the date of your examination places the existence of the disability within a presumptive period allowed by the law under which the bureau functions, the claim is allowed and all other evidence is practically superfluous.

Last year while serving as Department Service Officer for the American Legion in this state it was my privilege to handle in part, if not as a whole, several hundred of these claims and during the year made several trips to the Fifth District office of the Veterans Bureau in Atlanta to review claims which the Legion felt to be just, but which had been rejected by the Bureau. In going over approximately two hundred cases in that office I found large numbers of them had been decided against the claimant because there was no medical evidence on file to show that claimant was suffering from a service connected disability. Or at least the evidence was not in any shape that was admissible under the law. The law states that medical evidence to be valid must give the physical findings upon which you diagnosed the existing condition. It is not sufficient to make an affidavit that on or about a certain date you treated John Doe for tuberculosis. The bureau to legally admit your evidence must have a record of the physical findings upon which you based your diagnosis. For instance—your affidavit must show your findings on inspection, palpation, percussion and auscultation. Also temperature, pulse and respiration. A report of laboratory examinations if made and a report of X-ray findings

if such an examination was made. Then if you care you may add your diagnosis, but the tubercular specialist at the district office will gladly and usually correctly make the diagnosis from the record of your findings. And so on throughout the whole catalogue of ailments that the ex-soldier seems to be heir to.

I know from personal experience that many physicians, when requested to re-write their affidavits, become incensed at the idea of the bureau not accepting their diagnosis as given. They do not stop to consider, or possibly are ignorant on the subject, that the medical officers of the bureau do not doubt your ability to make a correct diagnosis nor do they want to offend you by asking for a detailed report, but they are required by law to exact this information before they allow an award of compensation. Why? Because the award of compensation to a disabled man is the equivalent of a draft on the United States Treasury and before payments are begun the legality of the claim must be fully established.

The American Legion maintains a very efficient organization for the help of our disabled men. Each local post has a service officer who aids in the proper preparation of affidavits and claims. Each state department has a department service officer who handles difficult cases and follows them up to see that proper action is taken.

Each of the major districts coinciding with the districts of the Veterans Bureau has a district rehabilitation committee which meets at regular intervals throughout the year to work out problems which arise in their districts. National headquarters maintains a liaison officer at each district office whose duty it is to aid post and department service officers in obtaining justice for their claimants. There is also a national rehabilitation committee which keeps in close touch with the entire situation nationally and acts as a clearing house for suggestions and recommendations from the entire Legion. This committee maintains at Washington an office in which is housed the office of the national service officer. His work is principally with cases that are referred to the central office of the bureau for consideration. The Legion considers the care and aid of our disabled Buddies its most sacred obligation and spares neither time, effort nor money to give them all the help needed to put their claims across.

As we are the officers who looked after the welfare of these men in training camp, aboard ship, in field and trench it is perfectly natural that upon their return to civilian life they still look to us for help. It hasn't been so far distant in the past but that most of us can remember vividly, flags flying, soldiers marching to camps, to transports, thru streets lined with cheering thousands. Patriotism was easy in those moments of high emotion. You were eager to get into a uniform and do your bit, regardless of sacrifices made. I am asking you today to continue along the high plane reached in those trying days of 1917 and 1918 and practise a peace-time patriotism. Lend your aid gladly and willingly to the disabled men in your community. It might have been you or I.

Peacetime patriotism I hear someone ask? Yes, there is such a thing. And it means service, service to family, neighbor, to nation and to Almighty God.

DISCUSSION

Dr. Wm. LeRoy Dunn, Asheville: I do not think that the Medical Officers' Reserve Section can let go by without discussion a paper which is necessarily so near to the hearts of every soldier.

I am glad that Dr. Mann has called attention to some of the defects in the Bureau which I have sometimes met myself because of a rather intimate connection with many of its activities. I am also glad that Dr. Mann has taken a rather sympathetic attitude towards Bureau officials in many particulars. Unfortunately, many of the rules of the Bureau have been given all the dignity and force of enacted law. For example: The law states that a diagnosis of tuberculosis must have been actually made by a physician within the three year period after discharge to establish a presumptive service origin, but the Bureau rules set out just what shall be found to establish a diagnosis. While I am in the rather awkward position of having been one of the consulting commission recommending these safeguards, I must confess that in practice they have not infrequently prevented the awarding of very just claims. These rules are too arbitrary, and bring about distinct hardships. We are doctors here together, and we must admit that one of the most common failings of the average doctor is not keeping careful notes. The ruling of the Bureau requires that a man give an affidavit of his physical findings which were made usually several months, and sometimes more than a year before making the affidavit. Manifestly, to give such detailed findings after many months from memory alone, is an absolute impossibility. On the other hand, it only too frequently happens that physicians will not go to the trouble to give as detailed information as they can about the findings in cases, taking the high and mighty position that they have made the diagnosis, that that settles it, and that no Governmental official has the right to question it.

I have seen many cases where the Bureau has written back to the doctor and asked for certain additional information that is necessary to establish the claim, and the physician has become irritated, saying in effect, "I have made an affidavit and that ends it." In this way many times physicians prevent soldiers receiving their just dues. We owe it to ourselves and to the disabled soldier to co-operate in every way we possibly can with the Bureau officials.

Dr. J. Howell Way, Waynesville: I was just wondering if this might not help the ex-service men a bit. I want to get an opinion about the advisability of the Chairman of this section securing the attendance at each District Medical Society during this year of some fairly well posted doctor on the Veterans Bureau work, to spend a half an hour or an hour at the session of each District Medical Society meeting in each one of the ten districts in this state, and

call attention to some features in connection with the filing of claims and the proper examination and shaping up of these claims in a way to promptly get favorable action on the part of the Department. I was wondering if that wouldn't help, and if you think it would, let this Section adopt a resolution requesting the Chairman of this section to secure the attendance at each District Medical Society meeting of some competent medical man to present that subject to the doctors. What do you gentlemen think of it? You are in a position to say whether that will be worth anything or not.

Dr. Mann, closing the discussion: I think that suggestion is a very important one. Anything that will get the average doctor to understand that this red tape is necessary, and that if they didn't have the red tape it would cost the Government untold millions of dollars, and that it is necessary to protect against fraud and all sorts of things, and their coöperation is necessary, I think would be a tremendous help, because, after all, the obstruction to a chap's getting his compensation, who is entitled to it, is nearly always due to this. A great many are trying to get it that are not entitled to it. That has been one of the hardest things we have had to deal with. When a man is properly entitled to compensation, the greatest difficulty we have in getting it is the doctor not getting his affidavits in the proper shape. I think this is a very good suggestion if it can be carried out.

The following motion was carried:

That the Chairman of this Section from year to year appoint a competent and well informed man to visit each of the ten district medical society meetings in the state yearly, for the purpose of giving to the medical profession in North Carolina all possible information relative to service claims.

THE MEDICAL RESERVE CORPS FROM A NATIONAL VIEWPOINT

Major Glenn I. Jones, Surgeon General's Office
Washington, D. C.

Gentlemen of the Medical Veterans Section:

While in attendance at the Tri-State Medical Convention at Greenville, South Carolina, I was informed that a representative of the Surgeon General's office was desired to meet this section. It was my purpose to contribute a paper, but I have found that my enthusiasm causes me to write too voluminously, and I do not desire to infringe upon the time of the Society. Therefore, I have come before you without a prepared paper, to tell you frankly in a very impersonal way what we are trying to do in the organization of the Reserve Corps.

First, I want to convey to your Section, and through it to the Society, the sincere good wishes of the Surgeon General, and to compliment you on your splendid initiative and achievement in the organization of this section. The medical preparedness program

of national defense depends for its success upon what this Section has started. It is not an agency set up in a detached way from the medical profession. With 144,000 physicians in the United States, possibly less than two-thirds of whom are physically and otherwise fit for service, only one-half can be withdrawn from service without working a hardship, which means we can anticipate about fifty thousand physicians in time of war. Our plans actually call for about sixty-five thousand, so fifteen thousand must be drawn to the detriment of the community in case of emergency.

Now we know there has been a good deal of discord. There has been a reaction since the war, to a considerable extent justified, against military service. To give you an illustration, we have, in carrying on our work—intensive work—had personal communication with physicians. They say "I am through with military service. I won't join the Reserve Corps, but you can call on me in time of war." If you make a real business-like analysis, that man's attitude is unpatriotic, because we are trying to pursue a policy which provides for the organization in time of peace of units in which we can take Smith and Jones and Brown, according to his individual training in civil life, and give him the grade which he is entitled to, under the policy adopted by the Department at this time, promote him in time of peace after regular intervals, and call upon him, not as an individual to do any sort of work, but to do the special work for which he is fitted, and to insure the organization of that unit not in two months but in two days. It is useless for me to go into an analysis of the history of the United States with reference to preparation for national emergencies. It is disgraceful from the time of the birth of this country until we had the military policy announced by Act of June 4, 1920, which is based upon the efforts of a few illustrious gentlemen, not analyzing them in a political way at all, but from the standpoint of patriotism—Roosevelt and Leonard Wood. The present military policy is, in a sense, an outgrowth of those volunteer camps we had in 1914 and 1915, and which are today perpetuated in military training camps and the R. O. T. C.

For yourselves of the medical profession, you can see that we are going to repeat exactly the same disastrous events that occurred in the requisition of the medical profession in the World War, if we don't organize in time of peace.

The work of the Surgeon General's office is to secure men of the profession and get them to come into the Reserve Corps. Of course, first of all, we want the men who had experience during the World War. They are the nucleus of experienced men we expect to carry on our organization. Secondly, we want the profession to get back of a policy which will provide that every able-bodied graduate in medicine, licensed to practice medicine, will, as soon as he graduates, become an officer in the Reserve Corps. If we can do that, it will remove every occasion for lack of harmony, and we will have a promise of surety of medical work in an emergency. If he gets his license in 1921, he goes in as a

lieutenant. He steps up each five years one grade until he reaches the grade of lieutenant-colonel, so the question of inequalities in grade between professional men in civil life is done away with. Then, of course, we have an assurance that at all times we will have sufficient men in the Reserve Corps to organize a medical service for the Army.

At present I am sure that all the members of this section are familiar with the policy of the War Department covering promotion. The policy, while it doesn't please all, is liberal. It is as good a policy as we can adopt which assures efficiency and guarantees to do away with lack of harmony among the members of the profession in civil life. That policy provides that any man with a total of one years service, three months of which was in a higher grade, may step up in time of peace, and provides for promotion thereafter each five years.

Some of the difficulties we have with the profession are due to situations that developed during the World War, when medical men were given work with which they were not familiar. Unless men come in in time of peace when we can have the time to study their professional qualifications, we shall have a repetition of the same thing we had in the World War. If we have time in time of peace to make an analysis, I can assure you we will develop a well-rounded organization, so far as the Medical Department is concerned, because when we go along and assign a man to unit in which he is not satisfied he lets us know. During the last eight months we have yet one man to come back and say he was not assigned correctly. So, with a study of all his qualifications and World War Service, presented in his credentials when he applies, we get a man placed exactly where he ought to be.

There is another thing the profession complains of. A man will come in and say: "Because of my professional standing in the community . ." If he is not so proud of himself, some of his colleagues come in and say: "This man ought to have a better grade, and you ought to recognize his standing in the community." As we are today, as we visualize the thing, it is impossible to adopt that principle. Standards differ in different communities. One of the policies adopted, as you well know, is the fostering of military hospitals by civil hospitals. We go out to a hospital that has a good-sized staff and ask them: "Will you foster a military hospital, if your staff has facilities to organize one?" I mean personnel only. "Will you do it?" We ask them to nominate a man as Commanding Officer. They nominate a man and thereafter our dealings are through the Commanding Officer. In other words, he is then the representative of the community and the representative of the Surgeon General's office. He gathers around him the staff for that hospital. The advantages of an organization of that sort will appear to you at once. All we have to do in time of war is to notify Colonel John Smith to mobilize hospital at Fayetteville, North Carolina, and in forty-eight hours he has his unit ready.

Many of the men who were appointed as commanding officers of civil institutions, say: "I want Smith to be Chief of my service. He is an outstanding man in my community. He may not have had World War service, or may be a young man who has attained a captaincy. They ask us to give him a lieutenant-colonelcy. They come in and browbeat us. Can we take a hospital and say: "We will give you preferential treatment. We will give your man a colonelcy, or shall we apply the rule?" You can immediately see we would get charges of unfairness from the profession, and a charge which is justly made.

In addition to that, a great many men lose sight of the fact that an evacuation system in time of war is just as important, requires just as much brain, just as much activity, as a man who is doing G. U. work. Why should we put the professional man on a higher plane than these men doing work just as important? Some will say: "Your evacuation trains, medical regiments! give them to laymen. Let them command the field hospitals." Can you imagine anything more deplorable than to have laymen handling a medical regiment, where he is handling compound fractures, bundled up in a knot and thrown in an ambulance? You must have professional men and give these men just as much credit as a chief of the medical service. It is true that a man in your community who is a high class surgeon may be head and shoulders above the man who handles the sanitary train, but he has the stuff to carry on the evacuation work of that organization. It is a big administrative job, bigger than the chief of your surgical service will have, as a matter of fact. We want the profession to recognize that. The mere fact that he is not doing surgery or high class professional work; that he is handling mules and a big organization, does not mean you can sidetrack that to a layman. What does your layman know about the administering of morphine at the front to preclude the occurrence of shock? When a man dies of shock, he dies for just that cause. He gets tetanus because he doesn't get anti-toxin, or dies from shock because he doesn't get morphine. It is very different from the work you are getting in civil life. You know, in civil life, you see very little first aid work in your communities. The first aid work is usually neglected. The layman doesn't know how to handle those things. When you multiply the number of cases by a hundred thousand, as in war you can comprehend the necessity of having an adequate first aid and evacuation system in time of war.

There is another thing. Since it is military service, the medical side of it must be adjusted in a manner that will permit your men to fall in with the whole military scheme. You are a part of the divisional organization. The Commanding Officer of the division is a Major General. You cannot expect to have major generals in charge of field hospitals. As a matter of fact, we know that in time of war there is no adjustment of pay for a man that gives his service to the country. There are men like Secretary Denby of the Navy, a man who had a tremendous income, who can step up

and be a sergeant of Marines. You find war means a definite sacrifice on the part of everybody. The sacrifice is considerably less if we organize in time of peace. I think it is very safe to say that one-half of the billions of dollars the citizens are paying on their war debt today could have been saved if we had had a decent form of preparedness. The wastage was tremendous. Take the question of getting the doctors together in military organization, with our present puny little nine thousand. Take the question of getting up the difference to sixty-five thousand. If we had an organization of forty or fifty thousand men in the Reserve Corps, think of the difference that would make. We would not have to go to the four winds of the earth, order a man in Oregon to mobilize in Maine. That is the way it is done in time of war. You need a man in Oregon and you have him in Florida. You order him from Florida to Oregon, or vice versa. If you have your men organized in time of peace, you can organize the medical service to the maximum capacity that the medical profession in that section will stand. In time of war, if we have not that organization, a man has to be investigated just as we do now to find out his professional standing. He usually is badly assigned, because you put him where you need a man. So there is every justification for organization in time of peace. There are no real obligations imposed upon you. The regulations provide that where the training service interferes with a man's civilian engagements, he can disregard the training. The camps are voluntary for the medical profession. Of course, they can't step out and leave their clients. The training facilities are available and are voluntary. We would like to have you go to camp if you can.

There is another thing about the training program that is unfortunate. The appropriations have never been sufficient. Next year, I understand, we are to get about ten times as much money. That money is to be placed under the Surgeon General for training medical men. We are organizing our courses for the training of men along special military lines.

In closing, we feel in the Surgeon General's office that we are simply agents. We want your criticism; we want you to tell us where we are wrong. If we cannot see it your way, we cannot modify our program. We are making progress constantly. We have succeeded in doing away with the worthless letters of testimony. Letters of testimony may be necessary for a man coming in, say, for the infantry, but where we have the American Medical Association, your societies that give a guarantee of a man's professional standing, we can well do away with them. The Reserve Corps is in no sense an honorary organization. It confers an honor on the man who holds a commission, but it is an organization for the defense of the country. It is in no sense an honorary thing. I had a young chap not long ago in Washington who didn't come up to present his diploma and license. I got him on the telephone and wanted to know why he didn't come down and give us his diploma and license. He said he couldn't be bothered with that.

People knew he was a graduate of medicine. He hadn't thought about this though: that somebody who was a charlatan or quack might come in in the same way, if we didn't ask for credentials. He didn't think about the protective side, and the necessity on that account for taking the few minutes necessary to let me see his license.

I could talk on forever about the subject and give you all the details that come up. If I could impress upon your society the importance of getting a reasonable organization in time of peace! We are your representatives, in the Surgeon General's office. You have got to move. We are willing to go the limit to give you information. We haven't anything we are not willing to disclose to the members of the profession. We admit some inadequacies of the organization. The profession isn't ready yet for a change of policy. We can't attempt to correct the inequalities of grade which occurred during the World War, due to our lack of preparedness. We adhere rigidly to the policy; make no exceptions whatever to the policy laid down. There is no preferential class. We hope the system is one you can encourage and support and get behind. We think it is right. It is the best we can evolve at the present time.

I think the profession as a whole, in getting behind the Reserve Corps and getting it organized, should visualize that it is an organization for service, something they are giving for their country, and when they get in that frame of mind they will appreciate very much more the big honor which is being conferred upon them in being a member of the medical organization for national preparedness.

You know that we are living in an era in this country of enforced economy. I don't know but that this is thoroughly justifiable. We have to pay our debts sometime, and it is a pretty good thing for this generation to shoulder them, instead of passing them on. The amount of money we have is limited. We get along with 19 clerks where during the war we had a hundred. That slows us up, too. When a man makes application, due to the machinery that his application has to go through, it sometimes takes a couple of months before he gets his commission in the Reserve Corps. That isn't due to any lack of very sincere interest on our part, but unfortunately the amount of money allotted is so small that we can't speed up any faster. We have it constantly in mind to do everything we can to speed up to the organization of the Reserve Corps from our end. Men may get the impression when they apply and it takes two or three months that it is due to lack of interest. It is in no sense due to a lack of interest.

I thank you very much.

HOSPITAL UNIT "O" AND BASE HOSPITAL NO. 6, A. E. F.

Addison G. Brenizer, M. D., Charlotte
Formerly Lieut. Col. M. C. U. S. A., Chief of Special Service
Base Hospital No. 6, A. E. F.

On April 27, 1917, three weeks after war was declared, the organization of Hospital Unit "O" began at Charlotte, N. C., on the appointment by Col. Jefferson R. Kean, M. C. U. S. A., through recommendations by Dr. J. M. T. Finney and Joseph H. Bloodgood, of Dr. Addison G. Brenizer as director of the unit. By June 12, 1917, the unit was fully organized and recognized by the War Department as Hospital Unit "O."

We were not hurried away to France.

A month later, in July, the doctors were changed to officers in the United States Army, the nurses and enlisted men were not mentioned.

Receiving a commission, though a noble thing in itself, and receiving a commission with right to serve and receive pay, that is with all appurtenances, are two quite different things. We had the commissions to be sure, as attested to by a great scroll of parchment which said as much, and then, too, we had accepted it for what it was worth. Moreover, as evidence of good faith on our part, we had sworn away our young lives and promised to stick it out to "the end of the emergency" or to a time, a very indefinite time, determined by the "discretion of the President."

We knew also by these signs that we had rank; after all was said we had rank and some of us even had clothes to display it, but couldn't wear them.

There was much talk and a unanimous vote of all officers commanding this organization (we only had twelve officers among an even dozen allotted to the unit, who really felt their respective responsibility for the command) was that I go to Washington and find out our status or in other words "where we stood" and if the War Department still recognized our existence. This was the first of August.

An officer in the S. G. O. did not want to give out anything confidential or an official secret, but he would tell me unofficially that if he were me he would close his hospital, that is, if he had one, and call on his gang, because the first three units organized were to be sent immediately overseas and that Unit "O" was one of the first ready. I thought I might not be presuming too much if I took this suggestion as an inuendo.

Whereupon, I returned home, gave out the news to the members of the unit and consequently to the town as confidential but real dope. I tried on my uniform and closed my hospital.

It was then, during two months and a half's time, that we actually returned to nothingness. We were neither doctors nor

officers. We were merely Unit "O." The public had considered us as gone, and gone we were but had no place to go. Our usually indulgent patients didn't want us and the army would not take us on it seemed.

Once more our officers met and this time decided we were everything implied by three blazen letters S. O. L., a term well known in the army meaning simply "stranded or left," with, perhaps a connotation as well as a denotation. It was decided, or rather we decided, all of us, that I again go to Washington, but not alone without witnesses.

One of the officials in the S. G. O. didn't know "when in the hell" we were going, but assured us if we were rearing for service he could send the officers to camp. He also suggested that, since we were in the army, a little military training might not be inappropriate. It did seem reasonable. He then actually gave us our choice and left it with us as to where we would go. We decided, most naturally, that we would all like to go together to Oglethorpe.

It was in this way that, on September 15, 1917, one of us was ordered to New York, another to Vermont, another to Georgia, two others to Pennsylvania and the rest to Tennessee. Would we ever come together again?

I have merely mentioned those left behind; they were twenty-one nurses and fifty enlisted men. They were left at home to restlessly await instructions while they tried to carry on their usual pursuits as lawyers, druggists, bookkeepers, stenographers, etc. The stenographers might have served me well in answering the correspondence from these people and their families.

Then came a series of significant orders:

"October 15, 1917, Major Addison G. Brenizer, M. R. C., is directed upon completion of his course at Rockefeller Institute for medical research, New York City, to report in person to Major Fred H. Albee, Post Graduate Hospital, New York, for a course of instruction in orthopædic work, and upon completion of his duty to proceed to Fort Oglethorpe, Georgia."

"November 8, 1917, Major Addison G. Brenizer, M. R. C., is relieved from his present duties at Fort Oglethorpe and will proceed to Charlotte, North Carolina, for the purpose of mobilizing Hospital Unit "O."

The same date under separate orders the following officers were ordered to Fort McPherson, Georgia:

James P. Matheson, Capt. M. R. C., Charlotte, N. C.; William Allan, Capt. M. R. C., Charlotte, N. C.; Robert F. Leinbach, Capt. M. R. C., Charlotte, N. C; Hamilton W. McKay, Capt. M. R. C., Charlotte, N. C.; W. Myers Hunter, Capt. M. R. C., Charlotte, N. C.; Marion H. Wyman, Capt. M. R. C., Columbia, S. C.; Robert H. Crawford, Capt. M. R. C., Rock Hill, S. C.; Henry G. Turner, Capt. M. R. C., Raleigh, N. C.; Archie A. Barron, 1st Lieut. M. R. C., Charlotte, N. C.; Charles I. Allen, 1st Lieut., Wadesboro, N. C.

All these officers were promoted to a higher grade before the completion of their duties except Capt. Crawford, who voluntarily left the army on a Red Cross commission to Macedonia.

"November 10, 1917, under War Department authority, November 3, 1917, the following enlisted personnel of Hospital Unit "O," Charlotte, North Carolina, are ordered to active duty, and who, under War Department authority, are this date transferred to the Medical Department, National Army, will, upon completion of mobilization, under command of Major Addison G. Brenizer, M. R. C., proceed without delay to Fort McPherson, Georgia, for the purpose of training and equipping command prior to duty overseas.

T. J. Covington, Wadesboro, N. C.; C. B. King, Jr., Selwyn Road, Charlotte, N. C.; John F. Durham, 804 S. Tryon St., Charlotte, N. C.; R. M. Miller, Ford Motor Co., Louisville, Ky.; D. A. Tompkins, Jr., Edgefield, S. C.; A. P. DuLong, 268 N. Church St., Charlotte, N. C.; A. Irwin Henderson, 219 N. Tryon St., Charlotte, N. C.; E. D. Taylor, Taylor Bros., Winston-Salem, N. C.; E. P. Andrews, Charlotte, N. C.; Caldwell Howell, Cherryville, N. C.; J. T. McCrorey, Roddey Poe Merc. Co., Rock Hill, S. C.; Thomas C. Abernathy, 1st National Bank, Lincolnton, N. C.; Alfred S. Reilly, 408 Park Ave., Charlotte, N. C.; Fred Johnson, Davidson, N. C.; John M. Barringer, Statesville, N. C.; John H. Wilson, care F. P. Woll Co., Frankford, Philadelphia, Penn.; E. S. Reid, Jr., Charlotte, N. C.; R. T. B. Little, care So. Cotton Oil Co., Gibson, N C.; F. H. Medlock, Jr., 211 Hawthorne Lane, Charlotte, N. C.; B. H. Webster, 304 Commercial Bldg., Charlotte, N. C.; C. L. Whiteside, Rock Hill, S. C.; H. S. Caldwell, Davidson, N. C.; W. J. Brown, 544 E. Morehead St., Charlotte, N. C.; A. B. Taylor, 915 W. 4th, Winston-Salem, N. C.; R. H. Harding, 622 N. College St., Charlotte, N. C.; Charles F. Brown, 404 N. Church St., Charlotte, N. C.; Thomas L. Taliaferro, 267 W. 72nd St., New York, N. Y.; W. M. Gibson, Davidson, N. C.; W. M. Osborne, 267 W. 72nd St., New York, N. Y.; Jess E. Corpening, 301 N. Tryon St., Charlotte, N. C.; W. F. Robertson, U. S. Tire Co., Charlotte N C.; A. L. Young, care B. M. Fewell, Rock Hill, S. C.; O. M. Marvin, Statesville Drug Co., Statesville, N. C.; W. H. Branson, care Liggett-Myers Tobacco Co., Lexington, Ky.; J. F. Swing, Charlotte, N. C.; G. B. Crowell, Lincolnton, N. C.; J. Frank Love, Lincolnton, N. C.; Joel J. McAden, Charlotte, N. C.; Paul G. Anderson, Rock Hill, S. C.; J. Foy George, 101 W. Exchange, Fort Worth, Tex.; H. L. Everett, Laurinburg, N. C.; Fred Field, Mooresville, N. C.; W. A. Davis, 403 W. 7th St., Charlotte, N. C.; J. C. Moose, care Mr. Gardner, Central Ave., Charlotte, N. C.

Under the above authority the following named female nurses of Hospital Unit "O," Charlotte, N. C., are ordered to active duty and upon completion of mobilization will, without delay, proceed to Ellis Island, N. Y., for training and proper equipment:

Mrs. A. W. Allen, 622 N. College St., Charlotte, N. C.; Miss Margaret White, Charlotte, N. C.; Miss Catherine A. Ikard, Charlotte, N. C.; Miss Julia Colson, Charlotte, N. C.; Miss Gertrude Shepard, 140 Juniper St., Atlanta, Ga.; Miss Cora L. Dearman, Charlotte, N. C.; Miss Sarah M. Harris, Concord, N. C.; Miss Josephine Watts,

Charlotte, N. C.; Miss Katherine Osborne, Charlotte, N. C.; Miss Elma Jones, Charlotte, N. C.; Miss Elizabeth Hill, Charlotte, N. C.; Miss Harriet L. McCoy, Spartanburg, S. C.; Miss Elizabeth Low, Charlotte, N. C.; Miss Edna M. Hill, Charlotte, N. C.; Miss J. M. Alderidge, Charlotte, N. C.; Miss Lula Lambeth, Charlotte, N. C.; Miss Macie Stanford, Charlotte, N. C.; Miss Sue J. Moore, Charlotte, N. C.; Miss Blanch Leonard, Charlotte, N. C.; Miss Bess Swearngan, Charlotte, N. C.; Miss Rose A. Downey, Charlotte, N. C.

Five of our men were lost to the unit at Fort McPherson. Dr. C. L. Whiteside, dentist from Rock Hill, South Carolina, was sick in the hospital with temperature and heart trouble and was allowed to go home on a furlough prior to his discharge and there he died suddenly of heart failure. Caldwell Howell, Cherryville, N. C., was left behind with meningitis, but later recovered almost completely but did not continue his service. Dr. B. H. Webster, dentist, was transferred to the dental corps. John Wilson, Frankford, Pa., and E. S. Reid, Jr., Charlotte, N. C., were transferred to the aviation corps. With the exception of a severe pneumonia passed through by William J. Brown, Charlotte, N. C., and the accident to Miss Sarah M. Harris, Concord, N. C., whose neck was cut twice by a negro patient in delirium, there was no serious sickness nor serious mishap to any one in the unit during the services of eighteen months in this country and in France.

'Cording to orders, I saw the nurses off from Charlotte, N. C., to New York early in the evening of November 15, 1917, and escorted the men over a night's ride to Atlanta, Georgia, over beyond which city lay Fort McPherson. With fifty men dressed in civies and accompanied by my wife, we detrained at the station in Atlanta, made our way in a body led by myself and wife to the first street car, pointing in the direction of the Fort. I was very much annoyed by the street kids who wanted to carry posters or graft free tickets to the minstrel show.

The street car dumped us before the gate of Fort Mack, as the conductor pointed it out to us. We entered the walls of that ancient fortification to stand a siege for three months. Confined to camp, more or less, we spent the time from November 16, 1917, to February 4, 1918, with many false alarms as to our leaving and repeatedly warned to be ready to depart for duty overseas.

On February 4, 1918, the "confidential order" came, ordering Units B, H, O and R, under the command of Major Brenizer, to Camp Merritt, New Jersey. This was a "secret movement of troops," known to all our friends up in North Carolina who met us at the stations as we passed through the State.

Our stay at Camp Merritt was short, only a week, so that on February 16, amid a clamor and confusion, we left at six a. m. for Pier 56, North River, New York, and arrived there about eight o'clock. One of our officers was left sleeping at Camp Merritt and only arrived to join us, after traversing New York in a "flivver" just as the boat was raising its gangway.

Our boat was one of the Cunard Liners, S. S. Carmania. We were sailing at a bad season and just after the sinking of the Tuscania. It was very cold and at Halifax the land was covered with snow and the water was thick with blocks of ice. It was at Halifax that we left behind one of our officers, Capt. R. F. Leinbach, with pneumonia and came near losing one of our men, Charles S. Brown, who accompanied Capt. Leinbach to shore and who was barely able to leap from the top of the tug boat in which he was riding into our ship, as she was launching rapidly out to sea.

We were seventeen days on the water, arriving at Liverpool March 4th. Then we moved consecutively from Liverpool to Southampton, from Southampton, across the English Channel, to Le Havre and from Le Havre to Bordeaux, arriving at our destination on March 16, 1918.

After six weeks of travel, by land and water, with short intermissions at so-called rest camps, and ending the final lap with a three days and three nights trip on a troop train from Havre to Bordeaux, we were delighted to come to a halt.

Capt. Leinbach joined the unit after several months at Bordeaux. At Southampton, where the streets were kept dark and no lights were allowed on automobiles and where also the rule is to turn to the left, two of our officers were run over by an automobile and painfully injured. These officers recovered. Perhaps our most exciting adventure was our stopping at midnight in the middle of the English Channel following an explosion which proved to be the engines out of order and here we waited for two hours under such encouraging admonitions from the encircling torpedo boat as "if you loiter around here much longer you get a torpedo through you."

We shall never forget the day: Immediately after the arrival at Base 6 that wonderful lunch of beef, pommes frites, white bread, fromage, confiture and chocolada, the first bath and clean up followed by a dance that night. In spite of the fact that we were from North Carolina and our hosts from Boston, and a little suggestion of the reception of the country dog by the city dog, still our reception was all we could expect. At any rate before our final parting, after the war, many warm friendships were developed between us.

Unit "O" was merged with the Massachusetts General Hospital and with the addition of casual officers, nurses and orderlies formed the largest single Base Hospital in France. Base Hospital No. 6 was located near Bordeaux on the line between the 18 miles of American docks at Bordeaux and the whole Southern Sector and formed a hospital of 5,000 beds; 3,800 surgical and 1,200 medical.

The personnel of Unit "O" was distributed over surgical and medical services of the hospital. Major Richard Cabot of Boston was placed in charge of the medical service and Major Addison G. Brenizer of Charlotte, N. C., in charge of the surgical service.

The following figures will give some idea of the work done:

Total number of admissions to hospital	23,288
Number of deaths	420
Deaths from pneumonia	284
Total number of surgical cases	17,466
Number of deaths entire surgical service	79
Number of deaths in operated cases	52

(Twelve of these empyema and three pneumonia.)

Here we worked mostly day and night from March 16, 1918, to February 14, 1919, when all officers and nurses of the Massachusetts General Hospital and Unit "O" were ordered back to the United States, arriving in New York March 2, 1919. The men arrived in New York two weeks later. The division of the officers and nurses from the men and their arrival before them was simply a question of transportation allowed by the arrival at Bordeaux of an unexpected boat, one of the United States Fruit Company's, carrying only 94 passengers, and space sufficient for the nurses and doctors.

THE FUNCTION OF BASE HOSPITALS IN WAR

C. S. Lawrence, M. D., Winston-Salem

Mr. President and Gentlemen of the Veterans Section:

The function of a base hospital in war is simply that of service to the line troops. Like any other part of the service, the first thing we should think of in the medical organization is service to the line; to get a sick man well and back to duty as quickly as possible. A base hospital in war differs from a field hospital, in that the base hospital is a fixed unit. It does not move with armies as field hospitals do. A field hospital is always ready to move with troops. A base hospital is different from a general hospital in that a general hospital is located in the Homeland and does not move—such, for instance, as the Walter Reed General Hospital. The base hospital is located usually at a base port or railhead and receives its wounded from the line, from evacuation hospitals, field hospitals, etc.

To get the best results from any organization it is necessary first to have absolute discipline. The better discipline you have the better results you will have in any organization, whether in civil life or in the army. In the army, of course, you can get discipline much better and much quicker than you can in civil life. The question is: What is discipline? The best definition of discipline I ever heard was by an officer of the British Army, who said that discipline was the "instant, willing and cheerful obedience to orders." Instant, because an instant is time immeasurable. It is not a second or a minute, but instantly—instant obedience to orders. And willing obedience to orders and cheerful obedience to orders. The best way I ever found of getting discipline in my outfit was by personal supervision of everything that is done in

the unit; drilling the men personally, giving commands personally to the men and officers and nurses, will get discipline quicker than anything that I know of. I was always accustomed to getting out with the men myself and drilling them. After a snappy drill of an hour or so, stop and rest, and while you are resting, tell the men and officers what you are doing and what it means and what the object is, the object always being the offensive in the army. Let every man in the unit know he is getting a square deal; that you are going to see to it he gets a square deal, whether a highly trained man or an ignorant man. See that they get their pay as soon as possible; that they get all the clothes they need; that they are properly fed and have the best obtainable. Spend all the hospital funds in feeding the patients and the men. If you do all those things yourself you will have no trouble at all in having discipline.

Now the question of home units. I went into the service in July, 1917, with an ambulance company from home. The greatest trouble that I had with this ambulance company was the desire of promotion by all of the men in the outfit. I was kept busy constantly by letters from mothers and fathers, brothers and sisters and congressmen, all lauding the claims of this and that man for promotion. It was hard to make the men understand there was a table of organization. I felt like Colonel McDuffie did in the Spanish-American War, when his regiment all got to fighting for promotion. He lined them all up one morning and said, "I am going to make every one of you colonels this morning, but you will carry a gun and peel potatoes just the same."

I went from the ambulance company to the base hospital at Camp Jackson where I succeeded in organizing veterinary units, evacuation hospitals and so on. Then I went to McPherson and stayed three weeks and from there to Camp Lee and organized Base Hospital 61. I was assigned two hundred and some odd men from the depot brigade, the names of which—you have heard this story often—when you sneezed six men answered yes. Lots of the men were from the east side of New York, and from Pennsylvania. I was the only man from North Carolina in the outfit. I had two or three southern officers and the rest of the officers scattered all over the United States, from Texas to California and from Maine to Florida. I want to say that after I got rid of the tubercular fellows and fellows that couldn't speak a word of English, and so on, I had a good outfit, the best I had during the war, and I went overseas with it.

I want to apologize for these slides because they are somewhat disconnected. I have slides that show the activities of this organization from start to finish, but these are a little bit disjointed.

(Dr. Lawrence here showed the slides and explained their meaning.)

SECTION ON SURGERY

B. J. Lawrence, M. D., Chairman, Raleigh

CHAIRMAN'S ADDRESS

THE RIGHT ANGLE POSITION OF THE UPPER ARM OR SHOULDER JOINT FOLLOWING RADICAL AMPUTATION OF THE BREAST

Gentlemen of the Surgical Section: I want to thank you for the honor you conferred on me when you asked me to serve you as Chairman of the 1924 meeting. One and all I want to thank you. For I appreciate very much this expression of your confidence and esteem. Both as your Chairman and as a member of the Raleigh profession, I bid you welcome and declare the Section open.

Personally, I do not think a Chairman should read a paper for I think it is his function to prepare or arrange a program and preside at the meeting. Upon the strength of that belief I had planned not to prepare a paper and so stated my intention to several of the men. But with one voice they insisted that a Chairman should have a paper or a so-called address. Consequently I want to invite your attention to a few remarks on "The Right Angle Position of the Upper Arm or Shoulder Joint Following Radical Amputation of the Breast."

I do not know that what I have observed is new, nor do I claim anything especially original about it. But I do believe it has a tremendous bearing upon the comfort, convalescence and morbidity of carcinoma of the breast cases. There was a time when most men fixed the arm to the side after these operations. Just why, no one has ever known. I suppose it was because of the fear of secondary hemorrhage. It is true that at times breast operations are quite bloody and in early days the danger of secondary hemorrhage was, no doubt greater than at present. I think one is safe in saying that those days are gone, for I doubt if any well trained surgeon fixes the arm to the side today. I believe that fixation predisposes to, if not actually causes stiffening, immobility and even swelling of the arm. Of course these complications and seqellae are rare, at least we may say that they are not common and I hope they are on the decrease. But most every surgeon of wide experience has had both occur. And they are troublesome. In my own experience I have had only one swollen arm and that was in a man. The only case of carcinoma of the breast I ever saw in a man. It was soon after I began operating, and while the old man is improving and can work the arm still gives him trouble. That arm was not put up in the right angle position of the shoulder. It was not fixed to the side for I do not think I have ever been guilty of that. However, the elbow was not kept up at a right,

and I believe to this day that if I had kept that elbow at a right angle with the shoulder joint he would have been perfectly well.

This brings me to what I think is the most important of my remarks, namely, that while scarcely any one is fixing the arm to the side, and a few are encouraging early motion, most men are just allowing it to go free, as they say. This conclusion is drawn from a survey I made prior to the preparation of this paper. The idea was suggested to me by a friend and colleague, Dr. Hugh A. Thompson, an orthopædic surgeon, and I wish to give him credit for it. He was present when I finished a very radical operation for carcinoma of the breast about two years ago. We were discussing such complications as lost-motion and swollen arms. In the course of the conversation he asked the question, "Have you ever seen any lack of motion in these arms following an operation as you have done?" And I said "yes." My old friend above mentioned was on my mind in an instant. Further, I have seen stiff arms and swollen arms following operations by surgeons of wide experience and great skill. He said, "How about trying the right angle position of the shoulder. Just keep the elbow as high as the shoulder a week and then let nature pull it down." It is the same principle as used in bone and joint surgery of the shoulder. The thought struck me forcibly and I used it. I was agreeably surprised to find that by the fourth day the patient could use the hand and arm and by the seventh to ninth day she could comb her hair. To my mind that was unusual. I tried other cases and with favorable results. From that time I have not allowed a patient of mine after operation for carcinoma of the breast to go to her bed without careful instructions to the nurse to keep the elbow up in a right angle position to the shoulder. Let the fore arm go free. Do not bandage it, do not fasten it to anything but keep the elbow up. The idea was so simple and practical that I thought of course, everybody was using it and that it was my own stupidity or inexperience that had kept it from me. At the same time I was quite sure that I had never heard a teacher of surgery lay emphasis on the point. I then asked some of the other operators about it and they were not using the position. Some of those to whom I spoke used it with good results. I then sent out a questionnaire to ten prominent surgeons in the state and five out of the state, asking how to prevent such complications as lost motion and edoma of the arm after radical amputation of the breast for carcinoma. I was very much interested in their answers and I appreciated their kind replies. The causes given for such complications as above mentioned of course, varied with the different operators. One said that they were due to scar tissue in the axilla, another that they usually meant a recurrence of the growth. Still another said that it was due to a lymphatic block or an infection. Most of them said that they encouraged early motion and did not fix the arm. One eminent and very well known surgeon, speaking of swollen arms said, "And how to prevent it and what to do for it I wish I knew." Another very well known operator

stated that he always left a part or all of the Pectoralis Minor. Still another would have us leave all the muscles and dissect the fascia. But no one mentioned keeping the elbow up at a right angle with the shoulder joint. It may be that many men are using the position but do not consider it worth mentioning. If so I am willing "to render unto Cæsar the things that are Cæsar's." But my point is and the purpose of this paper is to emphasize the importance of this very simple point in the post-operative care. And to say further, that I think if one will keep the elbow up at a right angle to the shoulder one will not have trouble with motion, and that free and early motion will follow in almost every case. Also swollen arms will be less frequent. Even with a radical operation, dissection of the axilla and the removal of both muscles. And while the experience of one of so few years must be more or less limited, nevertheless I do believe the muscles should be removed and that the axilla should be stripped as clean as one can in dealing with carcinoma of the breast. I believe that by using the right angle position of the shoulder one can do this and still have free motion and a strong useful arm.

I would not forget to say that several of the men to whom I wrote mentioned putting a pad in the axilla, according to the idea of Dr. J. M. T. Finney. In this connection I wish to say that I have used the pad and it is useful but should be supplemented by keeping the elbow up. While preparing these remarks my attention was called to the fact that Williams speaking before the French Surgical Congress recently advocated what he termed the vertical position of the arm, namely, tying the hand to the head of the bed. He stated that by so doing that the swelling would be less and the motion freer. It was mentioned in the discussion that the extreme vertical position caused a bridge of skin over the axilla, with dead space that was difficult to obliterate, and it was suggested that the vertical position with the hand brought slightly anterior would do away with the dead space and be more useful. It has also been suggested or practiced at one time or another that the hand be fastened to the opposite shoulder. To my mind that is as bad as fixing the arm to the side.

In my mind nothing in the post-operative care of these cases is of greater importance than the right angle position of the arm and shoulder. I believe that it adds more to the relief and convalescence than any other one thing I know. My belief and opinion is based on the satisfaction I have experienced in practicing it.

Finally, I do not believe the vertical position is as good as the right angle position. I am satisfied that the arm should not be bound to the side and to hitch it to the opposite shoulder should be equally condemned. Further, I do not believe it is enough to say, "let the arm go free." For I think the elbow should be very definitely kept up. And if one will do that I think one will have

gone a long way toward the elimination of stiff and swollen arms. Even in the face of the most radical operation.

DISCUSSION

Dr. R. L. Gibbon, Charlotte: I have been very much interested in Dr. Lawrence's remarks. I guess in common with majority of operators, I have left the arm free. I have never tied it to the side. I have been troubled with swelling and edema, which I attributed to the lymphatic block. You do not say, Mr. Chairman, whether you fixed the arm in the right angle position or propped it up by pillows, and do not say whether you put a splint on it. In some cases, where it is necessary to make a very long incision, due to the extension of the growth, it might put some strain on the sutures. I do not know whether that is so or not. I would be glad to hear any explanation you have to make as to how the position works out—what is the rationale of the procedure. I can see that it would have a certain advantage, and I would be inclined to try it. I enjoyed the paper very much.

Dr. Lawrence, closing the discussion: Dr. Gibbon asks if I use a splint, and in reply I would say that I do not use a splint, but simply use a pillow. It does not make very much difference, how the elbow is kept up, but I use the pillow. The patient can reach her hair, her head, and even if the elbow is never higher than that it is fairly satisfactory. Thus far I have not observed any particular tension on the sutures, certainly nothing of any serious nature, no sloughing of any kind. I do not hand this out as a lifesaver, but, as I said, at the outset, it is a very simple point in the post-operative technic which has added to the comfort of my own cases, and I believe it will add to the comfort of any one who will use it.

INGUINAL HERNIA

D. T. Tayloe, Jr., M. D., Washington

The treatment of inguinal hernia depends upon the age, size, and general health of the patient, and the size and type of the hernia. All things being equal a truss is only indicated during infancy and old age, and in cases where co-existing diseases contraindicate operation. Even in these types of patients complications frequently arise demanding surgical aid. During childhood a truss should be worn until the fifth year, at the end of this time unless there is marked improvement or a cure established operation should be advised. In youngsters where the hernia is extremely large and interferes with the general health of the child or if the hernia becomes incarcerated or strangulated, operation is indicated. It

has been the experience of most surgeons that a large percentage of indirect inguinal hernias in childhood are curable by a properly fitted truss. In old age where the tonicity of the tissues is below par, and where the anatomy is greatly distorted by a constantly worn and frequently ill fitted truss, where the reaction of the tissues is slow, union poor and weak, confinement to bed dangerous; operation is likely to be a failure and sometimes followed by disastrous complications. This type of patient has worn a truss through life and as he grows older the tissues become relaxed and attenuated, the hernia increases in size to the extent that it can no longer be retained by a truss, strangulation sooner or later occurs demanding operation. This is the type of case that greatly increases the percentage of recurrences.

In complete inguinal hernia, relaxed external inguinal rings are common occurrences. It has been my brief experience that these cases frequently present such vague symptoms and indefinite physical findings that it makes accurate diagnosis at times extremely difficult or impossible; hence many of these cases go about from one man to another being treated for cholecystitis, viceroptosis, indigestion, etc., frequently operated upon for chronic appendicitis. Of course if it is obvious that the patient has an incomplete hernia or relaxed ring that is producing symptoms, I think operation is advisable, but at the same time I do not think it justifiable to operate upon every case of relaxed external ring with no other indication. In these doubtful cases, especially in young adults, if a truss is applied for a while a cure may be established, or at least the symptoms relieved. If after the truss is discontinued the symptoms recur, the diagnosis is no longer doubtful, operation is indicated. This simple and safe procedure will in the long run avoid unnecessary operating on at least a few cases that will be of no benefit to the patient or the surgeon himself.

Before beginning any operations for hernia very careful preoperative preparation of the operative field is quite important in avoiding infection, as we all know that infection is the common cause of recurrences. It is the object of every operator in repairing a hernia to reconstruct the inguinal canal and make it as strong as possible in an effort to guard against a recurrence, but in our effort to cure the hernia not to create another abnormal condition such as atrophy of the testicle or unpleasant post-operative sensory disturbances. In operating for inguinal hernia great care should be taken not to injure the ilioinguinal or illiohypogastric nerves or sensory disturbances will develop. The tissues should be handled very gently, especially in separating the sac from the cord, as here we can easily damage the vasdeferens causing future impairment of the testicle, or tear some of the small blood vessels causing a troublesome oozing which if not entirely controlled will greatly predispose to infection. High ligation of the sac is considered by all a very important step in any operation for hernia, this obviates the formation of a funnel shaped depression in the peritoneum which somewhat predisposes to a recurrence. It is

best to open the sac near the internal ring, insert the index finger into the sac and with a dry piece of gauze separate the sac from the cord above the internal ring. In children and in young adults after the sac is separated, ligated and removed the stump immediately retracts out of sight beneath the internal oblique, but in cases of large indirect hernia in elderly individuals where the elasticity of the peritoneum is not so great this does not occur. Here we transplant the stump of the sac and fix it to the inner surface of the abdominal wall above and median to the internal ring, the suture being passed from within outward and tied into the internal oblique or the aponeurosis of the external oblique. Occasionally in direct hernias where the mouth of the sac is very large we remove the pouting sac and close the opening in the peritoneum as is done in appendectomy by continuous suture. While handling the sac of any hernia always make a careful search for a coexisting femoral or direct and indirect hernia. Very often in operating for direct hernia a small indirect sac can be found coming out externally to the deep epigastric vessel. This is best demonstrated by traction on the cord. Where this exists it is best to convert the direct into an indirect sac by sliding the peritoneum beneath the deep epigastric vessels, thus obliterating the direct sac.

In operating for indirect inguinal hernia in children and young adults where the hernia is small, the muscles well developed and the regenerative powers of the patient good, most any of the operations now being done give very satisfactory results. But in cases of direct hernia, double or single, and in large indirect hernias in elderly individuals where the muscles are flabby, anatomy distorted, all structures attenuated, and the reaction of the tissues only fair, even the best operators and operations are put to a test. In these types of hernias there usually exist a very large defect at the lower internal angle of the inguinal canal to be repaired and in doing so a considerable amount of tissue is frequently required. In reconstructing an inguinal canal so damaged and distorted it is often necessary where the conjoined tendon is flabby and poor to utilize the rectus muscle. This is made simpler by severing the anterior sheath of the rectus muscle near its fusion with the aponeurosis of the external oblique. This procedure is especially of value in cases of double direct hernia and in other cases where the tension of the tissues is too great. In these cases where recurrences are most feared a complete transplantation of the cord gives better and more dependable results. As yet we have not had any complaint of tenderness of the cord due to its superficial position or any signs of impairment or injury to the testicle.

Inguinal hernia as well as other surgical conditions requires some post-operative consideration. After completion of an operation for inguinal hernia the patient should be placed in a position of relaxation. This aids greatly in the promotion of early primary union and adds considerable to the comfort of the patient. The aponeurosis of the external oblique is continued downward to aid

in formation of pouparts ligament and after forming pouparts ligament is continued into the thigh as the fascia lata. Some of the fibers of the internal oblique and transversalis arise from pouparts ligament and thus it is evident when the ligament is put on the stretch it in turn exerts some pull on the external oblique, internal oblique, and transversalis muscles. This is readily demonstrated by extending the thigh. Following operation two pillows are placed under the knees of the patient and after he recovers from the anesthetic two pillows are placed beneath his head, the latter relaxing the rectus muscle. This position brings about a condition of complete relaxation, brings the structures employed in the repair of the hernia in closest approximation with least possible tension of the tissues. The patient is kept in this position for nine days, at the end of this time the stitches are removed and the patient finally discharged from the hospital on the fourteenth day with proper instruction as how to care for himself for the next thirty or sixty days.

For the past two years we have been doing the following operation almost routinely in all cases of direct hernias and large indirect hernias in elderly individuals where a recurrence was feared. There is nothing original about this operation. I first saw it performed by Dr. Walter E. Lee at the Pennsylvania Hospital in Philadelphia and termed by him a modified Halstead operation. The incision is made parallel to and above pouparts ligament as usual and the aponeurosis of the external oblique is exposed. The aponeurosis is opened about half an inch to the median side of the cord passing through the internal pillar of the external ring thus providing a generous flap for imbrication. The inguinal canal and its contents is exposed, the cremaster muscle is incised and reflected aside thus bringing to view the sac. The sac is separated, ligated and removed and the stump transplanted and fixed to the inner surface of the abdominal wall above and median to the emergence of the cord. The cord is now ensheathed by the cremaster muscle with a continuous suture of small catgut which offers some protection in its new superficial position. The cord is now dislocated from the canal and retracted to the pouparts ligament side of the wound. The shelving margin of pouparts ligament including gimbernats ligament is now exposed along with the crest of the pubic bone. The next and most important step of the operation consists in suturing the entire thickness of the abdominal wall in mass to gimbernats ligament and shelving margin of pouparts ligament beneath the cord. The sutures are of interrupted No. 3 chromic catgut, four or five sutures being placed beneath the cord up to its emergence from the inguinal ring. Three similar sutures are placed above the emergence cord. The first suture is started through the aponeurosis of the external oblique and passes through the entire thickness of the abdominal wall and emerges again at the outer border of the conjoined tendon. It is now continued upward and outward through the aponeurosis of the external oblique just about half an inch opposite the start-

ing point on the same side of the wound. The suture is now completed by passing through the periosteum of the pubie bone and some of the fibers of pouparts ligament. Four or five interrupted sutures are placed about half an inch apart in similar manner up to the emergence of the cord. Three similar sutures are placed above the cord. After these sutures are tied it brings the entire thickness of the abdominal wall into apposition with the shelving margin of pouparts ligament in a manner that will establish a fascia to fascia union instead of a muscle to fascia which commonly occurs. This leaves the cord completely transplanted and lying upon the anterior surface of the aponeurosis and external oblique, the reflected layer of the aponeurosis of the external oblique which was turned outward when the cord was exposed is now turned toward the median line and sutured to the anterior surface of the aponeurosis of the external oblique by continued suture above the emergence of the cord. Below the exit of cord this layer is embricated beneath the cord and again sewed by continuous suture to the aponeurosis of this region. Thus we have reconstructed the inguinal canal in such a manner that we have placed the entire thickness of the abdominal wall beneath the cord and in doing so have created approximation of like structure. This fascia to fascia apposition will produce a firmer and stronger union than will result from a muscle to fascia union.

Out of a series of 67 hernia operations that have been done from one to two years we have had two recurrences. In 51 cases the modified Halstead operation was done and in 16 cases the Ferguson operation was done. Out of this number 11 were direct hernias and one double direct. One of the recurrences occurred in a man 58 years of age who had been operated upon for a large indirect inguinal hernia, the recurrence developed seven months following operation. This man began hard work immediately on returning to his farm from the hospital. In this case the cord was so short that a modified Halstead operation could not be done, hence the cord was not transplanted. The second recurrence occurred in an infant four and one half months old who was operated for a large strangulated indirect hernia. This child took anesthesia very badly, in fact he came near dying on the table. In this case the strangulation was relieved and the inguinal canal rapidly closed without making any effort to repair the hernia. This recurrence developed a few weeks after the patient was discharged from the hospital. As far as I have been able to ascertain not any of the 51 cases where the modified Halstead operation was done have recurred, although my friends might have repaired some of them for me.

BIBLIOGRAPHY

Skillern—Choice of operations in inguinal hernia.
Surg. Gyne. & Ob XXXIV-230 Feb. 1922.
Soresi—Hernias in Children.

American Journal of Surgery XXXVII-226. Sept. 1923.

Houguet—Observation on 2400 Cases of Inguinal Hernia. Surg. Gyne. & O. B. XXXVII-71. July 1923.

Earl—Inguinal Hernia—Surg. Gyne & O. B. XXXVII-116. July 1923.

Lyle—The Value of Position in Operative Treatment of Inguinal Hernia. Surg. Gyne. & O. B. XXXI-529. Nov. 1920.

Bloodgood—Transposition of the Rectus Muscle, etc. Ann. of Surg. Article LXX-81. 1919.

Houguet—Direct Inguinal Hernia. Ann. of Surg. LXXII-671. 1920.

Torek—Inguinal Hernia, Etc. Ann. of Surg. LXX-65. 1919.

DISCUSSION

Dr. Foy Roberson, Durham: I am sure we all enjoyed this splendid paper of Dr. Tayloe's, and he has covered the subject of inguinal hernia very thoroughly indeed. A long time ago the older men, in operating for inguinal hernia, had lots of failures. In those days they used to use silver wire, and oftentimes, even after using silver wire, would put the patient up in a plaster cast and elevate the foot of the bed, showing that the operation had not as yet become so standardized and so efficient as to make cure practically certain. But nowadays, with technic so developed and modern surgery developed as it is, operations for hernia are quite satisfactory. I would say that of the two great factors that enter into the success of an operation for any hernia the first is the technic of the operator. First in the technic, of course, would be the preparation for the operation. An inguinal hernia, being in the position it is, of course is more liable to contamination and it is harder to prepare the skin. The patient should be well prepared before the operation is begun. After the preparation and during the operation, one of the things very important, to my mind, is the control of bleeding. The wound should be kept dry. There is nothing that will work toward the failure of an operation for hernia as much as a hematoma forming in the wound. Then in doing an operation of this type, the tissues should be handled very gently. I do not mean a person should be chicken-hearted about it, but the tissues should be handled gently. Rough handling will lead to extravasation, and that will tend toward failure. Another point is the protection of the ileal branch of the ileo-inguinal nerve. Very often that will be injured, and after that the tissues atrophy and the operation will be a failure. These things, to my mind, mean much for success or failure: careful preparation, the control of bleeding. careful handling of the tissues, and preservation of the nerves.

The next factor is the type of operation that is used. Before the introduction of the transplantation of the cord by Bassini the operation was not so successful, but since that time the operations for both indirect and direct hernia have been successful. I think every one who operates for hernia has his own operation, based upon Bassini or upon the Halstead operation, but modifying it

and adding transplantation of the cord. It seems to me that the operation described by Dr. Tayloe is almost perfect, provided that we are careful in our preparation of the patient and in our technic of operation. It strikes me that this is a splendid operation to use, and I certainly enjoyed hearing this paper.

Dr. J. W. Tankersley, Greensboro: I just want to add another point of safety in doing this operation or any other operation for hernia. I think it has been estimated that in Guilford County there are enough hernias to keep a fellow busy for a solid year doing nothing but hernias. I think an important factor for success in any operation for hernia is the care with which we introduce our sutures—that is, the tension we put on them. I do not think the nature of the material makes any difference, provided you do not put too much tension upon the suture. I think a piece of ordinary thread is just as satisfactory for doing hernia as any other material, because there you will not put too much tension upon it but will bring the tissues together in the most satisfactory way without tension. I think where you put those tight sutures in you are liable to have degeneration of the muscle fibers or of fascia, and that in itself will predispose towards non-success of the operation. I think this is just as important as the technic or careful handling of the tissues, and none of us will decry the careful handling of the tissues. I am just as careful in a hernia operation as in a bone operation. I always require my assistants to sponge it out with an instrument—that is, with the sponge on the instrument. I do not put my own hand in and do not let my assistant put his hand in the wound.

URETERAL OBSTRUCTION

Based Upon a Study of One Hundred and Fifty Cases

J. D. Highsmith, M. D., Fayetteville

The failure to recognize ureteral obstruction is a frequent cause of unnecessary operations. It is difficult to make a differential diagnosis of ureteral lesions from the symptoms and signs presented by the patient due to the anatomic relations that the ureters bear to the adjacent structures, and the numerous etiological factors and secondary urologic changes.

A review of the cases of renal lesions treated by us in the past four years shows that practically all are mainly caused by obstruction in some form. It seems that however great the load thrown upon the kidneys to carry they will stand up under it remarkably well provided free drainage is maintained. Bacteria will not usually remain in the kidneys long enough to produce damage unless there is some obstruction in the drainage tract.

The cases of partial obstruction and the slowly progressing or intermittent obstructions are the ones that demand our special study, 1st, as to diagnosis; 2nd, treatment; and 3rd, actual amount of kidney changes that have taken place. Cases of sudden complete obstruction are usually recognized.

Obstruction of the ureter may be intrinsic or extrinsic in origin, it may be either congenital or acquired. The obstruction may be produced in early life due to a kidney inflammation of childhood, and in adult life be transformed into an active disease process due to a simple bacteremia which in itself would be harmless.

One of our recent cases gave a history of a fall from a wagon at the age of eight years, at which time she must have injured her right kidney as she was confined to bed for several weeks suffering with pain in the kidney region and hæmaturia. At the time of admission to the hospital she was twenty-two years of age, not married and had pyelonephritis in a slightly movable right kidney.

In the group of one hundred fifty cases in this series the largest number occurred in the most active period of adult life. The youngest patient treated was a girl age eight years, who for two weeks had been treated for chills and fever. There were six cases between the ages of eight and thirteen years. The oldest patient treated was seventy years.

TABLE OF AGES

8 years to 13 years	6 cases
14 years to 24 years	32 cases
25 years to 35 years	52 cases
36 years to 46 years	36 cases
47 years to 57 years	16 cases
58 years to 70 years	8 cases

In this series one hundred and eight cases occurred in women and forty-two in men. This can be accounted for due to the large percentage of ureteral kinks and angulations due to the varying degrees of movability of the kidneys, pressure from the pregnant uterus, diseased tubes and ovaries and tumors other than pregnancy. The cases of ureteral calculi were about equally divided.

In fourteen cases the obstruction was complete, in thirty it was intermittent and in one hundred and six cases partial. In four cases we could not get by the obstruction with a ureteral catheter and surgery had to be resorted to as an emergency measure. In one case removing an impacted ureteral calculus, and in one doing a pyelotomy. In the other two cases nephrectomy for hydronephrosis was performed, one being a kink over an aberrant blood vessel, the ureter being fixed in a kinked position and bound down by adhesions.

Ureteral kinks and angulations were the principal causative factors in the obstruction. Ninety of the one hundred and fifty cases coming under this classification, fifteen of the ninety cases were due to the freely movable or floating kidney, thirty-four were caused by the slightly movable or ptosed kidney, in four cases the kink seems to have been due to trauma and two were kinks over aberrant renal blood-vessels. In thirty-four cases the kinks were due to pressure from without, in seven cases this was due to the appendix, in thirteen the pressure was from the pregnant uterus, in two from fibroid tumors of the uterus, in five cases inflammatory affections of tubes and ovaries, one ovarian cyst, six post operative adhesions in the pelvis, two of these being secondary to drainage of pelvic abscesses.

There were thirty-two cases in which the causative factor was ureteral calculi. In all but one case it was possible to get by the stone with either a catheter or bougie, which were left in situ, thus relieving the pain and draining the kidney.

There were twenty-three cases of ureteral stricture, nineteen of which were inflammatory and four tuberculous in origin.

In two cases the obstruction was due to blood clots, in one case a diverticulum of the bladder, one a bladder diverticulum with a large sized stone in the diverticulum and one a large vesical calculus filling the bladder and causing obstruction at the ureteral orifices.

Some writers speak of a congenital valve formation at the ureteral orifices which if not releaved will result in congenital hydronephrosis; we have not seen any of these cases.

Spasm of the ureteral wall has been observed by us, most frequently in highly nervous patients; as a rule it is noted as soon as the catheter enters the ureteral orifice; the ureter grips the catheter and the harder one pushes the catheter the tighter it is gripped by the ureteral wall. By withdrawing the catheter and inserting another it will often pass without difficulty. Cases of ureteral obstruction due to papelloma of the ureteral margins have been observed by some writers. Another condition that occurs is ureteral occlusion due to sudden enlargement of the prostate gland which is most prominent intravesically causing a pulling and angulation of the vesical portion of the ureter, and back pressure on the renal pelvis.

Of the fifteen cases presenting the too freely movable or floating kidney with symptoms of obstruction the majority were in women who had borne children and were very thin. However, there were two men in this group and three young women who had not borne children.

The ptosed or slightly movable kidney is the type that presents the greatest problem not only as to diagnosis but also as to its treatment. It is most frequently met with in women who have borne children repeatedly and have had repeated attacks of pyelitis. We find this also quite frequently in men and children. While the ureters are apparently well protected by being deeply

placed in the abdomen shielded posteriorly by the muscles of the back and bony pelvis, and anteriorily by the peritoneum and its contents; they are particularly liable to pressure from without since they lie upon a firm bed favoring compression from in front. This is particularly true as they cross the iliac vessels at the brim of the pelvis, the ureters being angulated at the same time. There is also a tendency to angulation at the uretero pelvic junction and again as the ureters enter the bladder wall.

Blood clots, plugs or pus and collections of gravel may lodge in the lower ureter and give rise to violent attacks of colic. The obstruction is easily relieved by passing the ureteral catheter.

Calculi in the upper ureter are found less frequently than in the lower portion. Few calculi pass through the lower three centemeter of the ureter without causing intermittent obstruction and interfering with kidney drainage. Some become impacted temporarily, others remain here slowly increasing in size causing back pressure upon the kidney with slow renal destruction and usually renal infection. Five of our cases of ureteral stricture in the lower portion of the ureter gave histories of having passed calculi following several attacks of kidney colic.

The symptoms complained of are often very perplexing. The classical kidney and ureteral pains are known to all of us, but in the majority of cases the pain is not classical, it is the exception rather than the rule in a case of kidney colic to get pain along the course of the ureter radiating downwards, more often it is generalized abdominal pain without any typical radiation. In thirty-two cases of ureteral calculi in only six was the pain classical.

In this series an analyses of the most prominent symptoms showed pain in the lower abdomen to be the most common complaint; this occurred in forty-two of the one hundred fifty cases, being in the region of the appendix in thirty and associated with nausea and vomiting in ten cases. Generalized abdominal pain occurred in thirteen cases and it followed the course of the ureter in six cases. The pain was in the kidney regions in thirty-nine cases and in the upper abdomen in thirteen. Four patients came complaining of backache, nine chills and fever, and five hæmaturia. Bladder symptoms were the most common complaint in seventeen cases, painful micturition heading the list with ten cases and increased frequency next with seven cases.

All of these conditions have a more or less common symptomatology. The commonest errors in diagnosis are those of confusion with diseases of the appendix and pelvic organs.

The blood and lymphatic supply of the ureters bring them into intimate relationship with surrounding organs; and the nerve supply from the spermatic, renal and hypogastric plexus of the sympathetic system explains the complexity of symptoms and the difficulty in the differentiation of ureteral lesions subjectively.

It is very important that the presence of obstruction should be determined early. Many patients go along for years with a

partial or intermittent ureteral obstruction before the diagnosis is made, and then a condition is often present which makes nephrectomy necessary. Correct diagnosis depends on careful case history, physical examination, urinalysis and the use of the cystoscope, ureter catheter and urography. Negative microscopical findings on urinalysis by no means excludes ureteral disease, for obstruction may be present without inducing any changes in the kidney, and obstruction may be so complete as to stop the flow of urine from the affected side.

Cystoscopic examinations were made in all this series of cases and the ureters catherized, frequently the waxed tipped catheters were employed in the diagnosis of stricture and calculi.

Urography was carried out in one hundred and one cases including the thirty-two cases of ureteral calculi. All the slightly movable kidneys of which there were thirty-four in the series were diagnosed by means of pyeloureterograms. The ureteral kinks are not visible with the catheter in the ureter as the catheter acts as a splint. It is therefore necessary to withdraw the catheters well down into the bony pelvis and inject the ureters afterwards, or, better still, plug the lower end of the ureter by means of a Garcian catheter and inject a 25% solution of Sodium Bromide into the ureter and renal pelvis. It sometimes becomes necessary to make pyelograms with patient lying down and sitting up.

The X-ray cannot always be relied upon to reveal the presence or absence of a calculus. Out of thirty-two cases the X-ray returned negative reports on five cases where the calculi were afterwards removed by means of the cystoscope.

In one of our cases there was a bilateral renal occlusion due to bladder diverticuli both of which were adherent to the ureters. When the patient was first cystoscoped it looked as if there were four ureters, two on each side. The X-ray revealed the catheters coiled up in the diverticulum. Cystograms gave additional proof. Trans vesical removal of the linings of the sacs with drainage gave this patient complete relief from all symptoms.

The preparation of the patient for a kidney operation is just as important as the preparation of the patient for a prostatectomy. If we study our cases carefully it will be seen that the supposedly sound kidney is suffering not only from the increased work thrown upon it, but from absorption due to the diseased kidney. It is therefore necessary to establish free drainage from the sound kidney by means of ureteral dilitation before operating upon the diseased kidney.

All of the cases in this series excepting three who were nephrectomized for tuberculous kidneys were treated by means of ureteral dilitation, the ureters being dilated to No. 12 French and over in some cases. Seventy-one patients had some form of operation for relief of obstruction in addition to the dilitations. There were five nephrectomies for pyonephrosis, and four for hydronephrosis. In these cases drainage from the healthy kidney

was maintained by ureteral dilitation. The dilitations being commenced from ten days to two weeks after operation. As a rule not more than three such treatments are necessary.

Nine uretero-lithotomies were performed, following this operation the patients were cystoscoped and ureters catheterized on the seventh day after operation and from then on every third day until a No. 11 F. can be passed with ease.

Eleven appendectomies were performed, five removal of one tube and ovary together with appendix, three operations were performed for pelvic adhesions, three hysterectomies for pus tubes, and four for pelvic tumors, two suprapubic cystotomies were performed for large vesical calculi which were filling the bladder and causing obstruction at the ureteral orifices. One patient was operated on for diverticuli of the bladder which were causing bilateral ureteral occlusion. In the thirteen cases where there was a pregnant uterus it was necessary to do an abortion on two cases. One of these patients had hyperthyroidism and the other a cardiac decompensation. Renal fixation was performed on ten cases. In two of these cases the ureter was fixed in a kinked position by adhesions and had to be freed. Where the kink is due to aberrant blood vessels they should be ligated and severed. When adhesions are present and causing symptoms they should be broken up and the ureter freed.

Twenty of the thirty-two cases of ureteral calculi were removed by non-operative proceedings, ureteral dilitation proving the most efficient, the majority of these calculi were impacted. The number of treatments required varied, the smallest number of treatments required being two, the largest number being 18 or 20 over a period of eight months.

Frequently a major surgical operation is rendered unnecessary by prolonged drainage with a ureteral retention catheter, this is indicated in all cases of renal lesions accompanied by stasis that will not yield to ordinary methods of treatment.

Among the general methods of treatment employed were rest, bowel regulation, increased intake of water, urinary antiseptics and frequently alkalies. In very stubborn cases where the renal infection is severe and accompanied by stasis we give from two to five thousand C. C. and over of normal saline by hypodermoclysis daily with splendid results.

An analysis of the results obtained in this series showed the following:

Cured	101
Improved	40
Unimproved	7
Died	2

No case was pronounced cured until the urine from the kidneys was free of pus and bacteria and free kidney drainage had been re-established.

In the group of cases which were improved no cure was obtained, in most cases due to the slightly movable kidney. I doubt if a permanent cure can be produced in these cases without renal fixation.

In the group of seven cases which were unimproved the chief cause was refusal to go on with treatment.

In the group of two cases that terminated fatally one was a white female adult age sixty who had a nephrectomy for a pyohydronephrosis in a too freely movable right kidney. At operation it was shown that she also had an extensive carcinoma of the liver. An autopsy proved this. The other case was a male adult age fifty who had a large vesical diverticulum. He died in uraemic coma. An autopsy showed numerous abscesses in both kidney parenchyma with tremendously dilated renal pelvis.

CONCLUSIONS

1. The cases of partial obstruction and the slowly progressing or intermittent occlusions are the ones that demand our special study.

2. In early cases the ureteral kinks are not fixed in position. In order to avoid fixation and hydronephrosis early diagnosis and treatment are indicated.

3. The slightly movable kidney is the most frequent cause of the failure to recognize ureteral obstruction. It cannot be diagnosed except by special urological methods. We should do more and earlier nephrophexies on these cases to avoid permanent alterations in the course of the ureters.

4. With free drainage of the kidneys restored, in some cases with the aid of the indwelling ureteral catheters and lavage of the renal pelvis; the regeneration of kidney function is often remarkable, a kidney operation may be averted or a conservative operation supplant a nephrectomy in establishing a cure in an already much improved patient.

DISCUSSION

Dr. B. C. Willis, Rocky Mount: We need no longer go to the big cities to have cases carefully worked out and recorded and the facts studied later. This is quite a large series, and most excellent work has been done. There are some few points that I would like to bring out that, it strikes me, might be of additional aid in these cases. When ureteropyelograms have been made their interpretation is a very important feature. In early hydronephrosis there may be a pelvis holding only ten c. c. The pelvis varies in its capacity. There is no set amount that a normal pelvis will retain. A pelvis with a capacity of anywhere from two c. c. to twenty may be a normal pelvis, but if there is an obtunding of the calices in a pelvis holding only

ten c. c. it shows there is a pathological process going on in that pelvis. Obtunding is a very important point, to my mind, because we can not depend upon the capacity. We should not have a preconceived idea that a normal pelvis will hold ten c. c. It may hold only two c. c., and although we try to evacuate the urine it may be retained in the pelvis.

I am, in theory, agreed with Dr. Highsmith that you should withdraw the catheter well down into the ureter. There are not a few cases on record in which the substance has been injected into the substance of the kidney with very untoward results for the patient. Some cases have resulted in death.

What to do with these movable kidneys is a big problem. The Doctor says he has done ten fixations. We have done only two fixations, and we evidently made a very bad selection, because we have regretted it. The movable kidney is a big problem, and I believe it is usually associated with a general visceroptosis. I may say that in these two cases we demonstrated pathological changes going on in the kidney, the pelvis being obtunded, and the patient complained of similar pain to that he had when we dilated the pelvis of his kidney. They are a nightmare to the urologist and the surgeon. If he does fix them up, in our experience he is going to have further trouble with those cases. In other words, we have been unfortunate in our selection.

Partial, recurrent strictures are cases that give a lot of trouble. We look upon them rather like strictures of the urethra which have to be followed and have to be dilated from time to time to keep up drainage. It is a problem that is not satisfactorily settled as to just what is the best thing to do with them. Of course, if you have definite kinks and adhesions they should be operated upon, as Dr. Highsmith said, and should be relieved of the kink and dilated well and thoroughly until they admit a ten or twelve French. These recurrent stricture cases need additional points of investigation, that is, in focal infection. I well remember a young lady who was at the University of North Carolina and was compelled to give up her course there. We dilated the stricture and irrigated the kidney pelvis, and would get her comfortable and feeling that she was on the road to recovery, only to be overwhelmed with the idea that she had to come back again. We finally located in her tonsil the possible cause of her trouble and had the tonsils removed, even though they appeared innocent. She has gained in weight and we have not had to do any further ureteral treatment. The teeth are a questionable source of chronic infection in the genito-urinary tract, and should be attended to. The sinuses should be looked after. All points of focal infection should be ruled out when we have recurrent infections of the urinary tract, or symptoms.

I certainly enjoyed Dr. Highsmith's paper, and it demonstrates to my mind that North Carolina can take care of her sick.

Dr. F. Webb Griffith, Asheville: If it ever falls to my lot to have any ureteral trouble I hope it will be on the left side, for if on the right the chances are fifty-fifty that the appendix will go first. I think it would with myself, or with any average man. If the cases were all worked up as well as Dr. Highsmith worked up his cases, they would be found.

Because of the excellent and tremendous work of Dr. Hunner ureteral stricture has been popularized, sometimes I think too much so. Those of you who have done cystoscopic work will admit that in any case with a wax bulb you can get a suggestion of a catch. To diagnose ureteral stricture you have to get a sure enough hang, not just a suggestion. When you find a real stricture there is immediate relief. They do not think they are better, they know it. It is true the symptoms may return, but there is marked relief for a time. Some strictures occurring along the level of the broad ligament we know are post-operative. I think we ought to look for ureteral strictures and I think we shall find them, but I do not believe we ought to diagnose stricture just because we can not find anything else and just because of a little hang we get in the normal curves of the ureter.

As to ptosis of the kidney, two things struck me very forcibly some time ago. That is, dropped kidney is very rare in men, but in women relatively common, especially on the right side. The second thing is that with suspension of the kidney in those cases the results are very, very poor. It is very rarely that I do a suspension of the kidney; it is only in cases where the kidney is away down in the pelvis, obviously down. I do not believe suspending a slightly movable kidney does any good. If you cure the trouble you do it by these other measures, dilatation of the ureter, etc. I believe a slightly dropped kidney is due to a general visceroptosis, which is due to the formation of the chest wall—so-called conical chest.

Again I want to compliment the Doctor upon his excellent paper.

Dr. Gordon Crowell, Lincolnton: I am sure we have all enjoyed the excellent paper of Dr. Highsmith's on this subject. Recently a case came into our hospital complaining of bachache and anuria of three days duration. At cystoscopic examination a stone was located blocking the lower right ureter. During the two hours following its removal the patient passed about two quarts of urine. I would like to know whether the doctor has had a similar case.

Dr. K. P. Neal, Raleigh: I enjoyed this paper very much, principally because I remember a paper three years ago at Pinehurst, and I remember the expression on the faces of the men when the paper was discussed. It also recalls to my mind the work of Lyon done in Philadelphia recently, and the gall-bladder drainage done with good results in the hands of some men and poor results with others. I have been

wondering whether stricture of the ureter as popularized by Dr. Hunner a few years ago would have the same results. I am glad to see that Dr. Highsmith has been doing such good work.

I think in some cases surgical procedures have been performed demonstrating to the naked eye that there was a stricture or kink, etc., and such procedures have been of a great deal of service in those cases. I think only in this way can we satisfy ourselves that the syndrome of symptoms resulting from stricture of the ureter is a fact, and I think only by such complete work as this can we make diagnosis that will stand.

I enjoyed the paper very much, and it has certainly given us a great many facts which will be of service to us.

Dr. R. T. Ferguson, Charlotte: I am speaking from personal experience. Last August I had an acute attack of something, which turned out to be kidney colic. I had a stone in the ureter, and had pain right here (illustrating in left side, a spot the size of a silver dollar). I carried that pain for eight days. That pain is terrible; nothing in the the world will relieve it but opium. I want to pay my respects to the Crowell Clinic, to their aseptic technic and the way in which they do their catheterizations. I think if in my case the pain had been on the right side and if I had had my appendix—which I have not—it might have been thought to be due to the appendix, by myself and other men. There is nothing in the world that will cause the severe pain except the appendix or stone in the ureter. If you have had it you will appreciate the value of Dr. Highsmith's paper.

Dr. Highsmith, closing the discussion: I want to thank the doctors for their kind discussion of this paper, and in conclusion I would like to say that the cases not recognized are those cases of partial obstruction. The completely obstructed cases are recognized and given proper treatment, but cases of partial obstruction are very frequently not recognized until it is too late to save the kidney and a nephrectomy has to be done.

In cases where you do nephropexy, I think if you will practice dilatation you will get better results. I think more of these cases should be fixed, because if they are not the ureter will become fixed in a kinked position and you will never get any drainage. The whole thing depends upon establishing good drainage. I think that in diagnosing these cases of stricture you should use both the wax-tipped catheter and the ureterogram. You get lots of information from the ureterogram that you can not get from the wax-tipped catheter, and vice versa.

There is a class of ureteral strictures in the male which you find complicating chronic posterior urethritis. We have recently

had several cases of chronic posterior urethritis that would not yield to treatment, and we catheterized both ureters and they immediately cleared up. The close proximity of the seminal vesicles to the ureter makes it easy to see how the inflammation can extend from the seminal vesicles to the ureter and give occlusion, or partial occlusion, of the lower end of the ureter. I believe that is very frequently the case.

I remember one case of anuria. This was a case in which we had done an amputation of the penis for carcinoma. It was about the tenth day, and the patient in the middle of the night had a great deal of pain on the left side, and had anuria, complete suppression of urine. I did not know how to account for it. He died on the fifth day following this. I got an autopsy, and found that he had a calculus impacted in the left ureter.

THE SYMPTOMS AND PATHOLOGY PRODUCED BY SLIGHT DEGREES OF RENAL PTOSIS

W. M. Coppridge, M. D., Durham

The term, "movable kidney," is quite a relative one. No two definitions agree exactly in detail as to just what constitutes a movable, ptosed or misplaced kidney. Usually those writing on this subject make definite classifications depending on the extent of mobility or ptosis as compared with surrounding bony structures such as the vertebræ, ribs or ilia. Such a division of the subject is largely anatomical and cannot be relied upon to be of much value from a clinical standpoint. It is my purpose to consider briefly just one class—that of slight ptosis with accompanying slight retention of urine in the kidney pelvis. A marked movable or floating kidney is easy to recognize and if producing symptoms they are in most cases classical and do not offer much difficulty in diagnosis. There are, however, those in which there is just sufficient downward displacement to interfere with drainage, perhaps in some cases due to slight torsion or kinking of the ureter, and in this class of cases some difficulty of recognition may be experienced.

The causes of renal ptosis are varied. Some would have us believe that most of them have an embryological basis. This is probably true to the extreme degrees of movable kidney but the slight degrees we must assume are usually acquired. Women are more predisposed than men because of the shallowness of the renal fossæ. Pregnancy and lacing probably do not play the role they were once supposed to, because we find the condition equally prevalent among unmarried women and those who do not wear tight lacing garments. Rapid absorption of fat predisposes to the condition. It is certain that thin persons more often exhibit movable kidney. Of late years we have added to the list of etiological factors what I think is the main one and that is: increased weight of the kidney and pelvis. Any obstruction in the ureter which

causes retention of urine in the kidney will very likely predispose to ptosis by increasing the weight of the organ. Those of us who do much cystoscopic and ureteral work are gaining more and more respect for ureteral obstruction. In this subject of renal ptosis we probably have as a very important etiological factor, that of ureteral stricture.

In fact, in considering the symptoms it is most difficult to decide whether the most of them are produced by the ptosis per se or to the obstruction in the ureter. My reason for presenting this subject is that I have seen a series of seventeen cases presenting symptoms very similar in which our only findings were those of slight ptosis, slight ureteral kinking with mild infection in the pelvis of the kidney. Ureterograms in several of the cases have shown definite points of obstruction; in the others there was only that misplacement of the ureter that would accompany a displacement of the kidney of one or two inches. In eight of the cases the findings were so nearly normal, the ptosis was so slight, that the diagnosis of movable kidney was made with a question. Yet under treatment for ptosis of the kidney the patients improved.

All of these cases complained of pain. In the majority it was severe. In some it was real kidney colic requiring large doses of morphine for relief. The character of the pain in all cases was more or less typically ureteral—paroxysmal and radiating at least to some extent. Most of them gave the history of attacks at intervals of a few weeks or few months depending on catching a cold or over working. They would assume that they had experienced an attack of kidney colic, recover in a day or so and return to work. Uusually there has been a dull ache in the affected side made worse by exercise of heavy work.

The urine may or may not show pus depending on the amount of infection. Several cases have shown occasional blood cell and one, free hematuria. Stone is, of course, suspected but can usually be ruled out by regional radiograms, using Bucky diaphragm technique and by the absence of obstruction to the ureteral catheter. It is certainly true that very small calculi may be missed even when all precautions are used but in these seventeen cases we have not been able in any of them to demonstrate a stone.

The results of ptosis with ureteral obstruction is inevitably infection. Once infection has taken place it is most resistant in this type of cases because of the poor drainage.

If the retention is of sufficient duration there may be some dilatation of the pelvis but this is not always found. Some of our cases that complained of most pain showed a small pelvis without any signs of dilatation. So the size and shape of the pelvis is of little diagnosticate value, especially in the early cases.

In the treatment of these slight degrees of ptosis surgery is not considered until after prolonged attempts with other methods. If ureteral stricture is present dilatation and irrigation are indicated. Careful attention is given focal infection in the teeth and tonsils in the cases with infection. An ordinary well fitting ab-

dominal supporter seems to help most of them. The usual kidney pad supplied with supporters is of no value and often very uncomfortable. In the seventeen cases we have not found it necessary to operate any of them although several have not been entirely relieved and may yet require a fixation.

The main point I wish to make is that very slightly ptosed kidneys may cause severe symptoms. All severe renal pain is not due to calculus or stricture but may be due to a slightly kinked or twisted ureter, even though the kidney is in *almost* normal position. We are likely to overlook these misplacements unless a ureterogram is made after the catheter is removed. Misplacements of the kidney are seen so constantly and so often produces no symptoms that we are likely in some cases to discount the part it may play. In all renal ptosis, slight or extreme, it is the condition and relation of the ureter that determines the symptoms and resultant pathology. In a large number of our ordinary cases of pyelitis a ureterogram with catheter removed will show that a slight degree of ptosis exists and that poor drainage of the pelvis results. In untreated cases a vicious circle is formed—the ptosis increasing the retention and causing increased weight of the kidney and thereby causing it to sag lower.

The treatment is certainly not entirely satisfactory. Many of them are very resistant, and it is often difficult to decide whether or not a fixative operation should be performed. We have had no experience in operating any of the cases which we have classified a "slight ptosis" and do not think it advisable until other forms of treatment have been given a prolonged trial. Most of them are relieved by the ordinary treatment for pyelitis—particularly when foci of infection are removed.

In conclusion it may be said that the purpose of this paper is to call attention to a group of cases exhibiting no marked pathological findings but a considerable number of symptoms which are thought to be due to or at least accompanied by slight ptosis of the kidney. Several of the cases, one in particular, had been treated by competent urologists and had been reported negative for lesions in the urinary tract. Ureterograms showed slight downward displacement of the kidney with some distortion of ureter. Treatment instituted with these facts in mind relieved the patient. I believe, that, if we will make more ureterograms with catheters removed (catheters tend to straighten out the ureter) we will often find a basis for ureteral symptoms that we would otherwise overlook.

SURGERY OF MESENTERIC INJURIES WITH REFERENCE TO INTESTINAL VIABILITY BASED ON CLINICAL AND EXPERIMENTAL EVIDENCE

T. C. Bost, M. D., Charlotte

Keen says, "in penetrating wounds of the abdomen, injury to the mesentery is one of the most common and serious lesions en-

countered." Hemorrhage itself may be fatal from injured mesenteric vessels; slits in the mesentery lead to hernia; but aside from this and what I especially wish to emphasize, is that mesenteric injuries are of importance in proportion to the extent to which the integrity of the blood supply to a given intestinal loop is compromised. So that a mesenteric injury can not be considered as a clinical entity but as an intestinal injury as well.

In addition to injuries resulting from trauma of the mesentery, we have also to consider the surgical removal of cysts and tumors of the mesentery, as their removal may affect the viability of an intestinal loop. Therefore in dealing surgically with traumatic injuries and new growths of the mesentery, it is necessary to arrive at a rather definite conclusion as to how much of the blood supply can be sacrificed and yet leave the affected loop viable. Failure to resect a loop of intestine incapable of regaining its vitality would be disastrous, while doing a resection unnecessary would also give a tremendous increase in mortality, especially in traumatic injuries, as other organs are frequently injured at the same time, making such a case a very poor surgical risk. So that in a border line case severely shocked it would probably be better not to do a resection.

Wabasse says wounds parallel to the bowel, if they cross one or two large vessels, require resection of the bowel, and that simple suture of wounds of the mesentery is not much called for because wounds large enough to require suturing are apt to have done so much damage to the vessels as to demand more radical treatment.

Da Costa says, if branches of the superior mesenteric artery are divided near the bowel, gangrene of the bowel will result, but wounds of a branch far from the intestine does not cause gangrene. If the wound is found close to the gut the portion of the gut supplied by the cut vessel should be resected.

Fowler says that if more than an inch or so of mesentery is torn from an intestine a resection should be done.

Surgical teaching would seem to fix a mesenteric tear of about two inches at its intestinal attachment, as being the border line; that is greater lengths would require resection while shorter lengths would only require suturing.

The clinical cases that I wish to report, supplemented by some experimental work that I have since done, would tend to show that a much more extensive sacrifice of the blood supply can be tolerated without the necessity of a resection.

CASE REPORTS

White man, age 36, was shot in the abdomen with a 38 caliber pistol, and was admitted to the hospital in a marked state of shock with severe abdominal pain and with general board-like rigidity. A laporotomy was done within three hours of the accident. There was a large quantity of blood in the abdomen. Nine perforations were found, two in the transverse colon, and

seven in the small intestine. The perforations were closed in the usual way. The bullet ranged along the mesenteric attachment severing the blood supply to an intestinal loop for four inches. The bleeding vessels were ligated and the mesentery sutured to the intestine. The omentum was then tucked around this intestinal loop and tacked. No resection was done. A drain was put in. Patient made a good recovery and is now in good health 2½ years after operation.

White man, age 66, dairyman. Was severely gored by a bull July 28, 1921. The abdomen was torn open and a number of coils of small intestine were dragged and forced out of the abdomen. The man was then wallowed about in the farm yard before he could be rescued. A large bath towel was pinned around him to support the extruded intestinal loops, and the patient was taken to St. Peters hospital, where I first saw him several hours after the accident. He was in a marked state of shock with coils of intestine still outside, and there was hemorrhage from the wound. Treatment to combat shock was immediately instituted, followed by operation. There was a large irregular wound 3½x5 inches through the right rectus muscle about the level of the umbilicus. This wound was excised and enlarged whereupon the abdomen was found to have a large quantity of free blood and hemorrhage was still in progress from torn mesenteric vessels. The horn had passed through the base of the mesentery and ranged upward along the aorta stripping off the peritoneum and loosening the head of the pancres and duodenum. The mesentery was torn loose from the small intestine at its attachment at two different points, one for a distance of three inches and the other for eight inches. After ligating the bleeding vessels (Fig. 1) the mesentery was sutured to the intestine, and the omentum tucked around the long damaged loop and tacked in position (Fig. 2). Owing to the general condition of the patient a resection was not done. For several days following the operation the patient remained in a serious condition, but gradually improved. There was slight drainage from the wound for about ten days. Aside from this the man made an uneventful recovery and left the hospital in about three weeks, and is now in good health three years after operation.

Woman, age 38, had tumor mass completely filling the pelvis which could be palpated above pubes. This was at first thought to be an ovarian cyst. At operation it proved to be a large mesenteric blood cyst. It was attached close to the intestine and in its removal, the blood supply to the intestinal loop was apparently sacrificed for 3½″. The omentum was tacked around the loop, and over the raw mesentery. Patient made a good recovery, and is now in good health, sixteen months after operation.

EXPERIMENTAL WORK

Dog, No. 1. Was operated on March 2, 1923. Six inches of mesentery was ligated, and cut away from the intestine, severing all blood supply. (Fig. 1). The mesentery was then sutured to the intestine to close the opening, and omentum was tacked around the damaged loop. (Fig. 2). The dog made a good recovery. Three months later the dog was again operated on to explore the result. It was found that omentum was densely adherent to the intestinal loop, and exceedingly vascular.

Dog No. 2. Was operated on March 5, 1923. Eight inches of mesentery was ligated, and separated, and treated as in dog No. 1. This dog made a good recovery and got away two weeks after operation.

Dog No. 3. Was operated on March 12, 1923. I meant to separate the mesentery for about ten inches, but when the vessels were tied, and the mesentery severed, I found that thirteen inches had been separated. This dog at first vomited more than the others, but apparently made a good recovery, and was able to take all kinds of food. Five weeks after the operation the dog was found dead in the morning without any signs of having been sick the day previous, having taken food well, and was as playful as usual. Unfortunately I was out-of-town attending the state meeting, and did not get to autopsy this dog. After five weeks of normal health it does not seem plausible to assume that this dog died from a failure of this intestinal loop to regain its vitality. This dog was pregnant at the time of operation, which might have been a factor. All these dogs were fed all kinds of food, including bones.

COMMENT

At this stage of the clinical and experimental work, I am unable to say where these long loops of intestine freed from their mesenteric blood supply, got sufficient nourishment to survive. The mesenteric vessels near the intestine are said to be terminal and do not anastomose in the intestinal coats. It does not seem plausible that simple suturing of detached mesentery with its ligated vessels back to the intestine would establish blood supply sufficiently early to save the damaged loop. Therefore it would appear that wrapping the omentum around the intestine and suturing it in position (Fig. 1), hastens the formation of plastic adhesions about the loop, thus facilitating the re-establishment of the blood supply. On exploring one of the dogs two months after operation the omentum, mesentery, and the intestine itself were found to be very vascular at this area. Aside from the scientific and clinical interest, the important practical point is that a long loop so treated does survive, making a resection unnecessary. I am not prepared to say that it would always be safe to ignore a loop of intestine separated from its mesentery from 8-10 inches as the clinical and experimental work might tend to show. However in border line cases already severely shocked, I am of the opinion that it would be safer not to do a resection, certainly, where no more than 4 or 5 inches are separated, which is about twice the previously recognized border line. More conservative surgical treatment promises the better result.

CONCLUSIONS

1. This limited clinical and experimental work would tend to show that a much more extensive sacrifice of the blood supply to an intestinal loop can be tolerated, than has heretofore been taught and practiced.

2. It necessarily follows that the number of intestinal resections can be materially reduced with a reduction of mortality, shortening of convalescence and increase in number of complete recoveries.

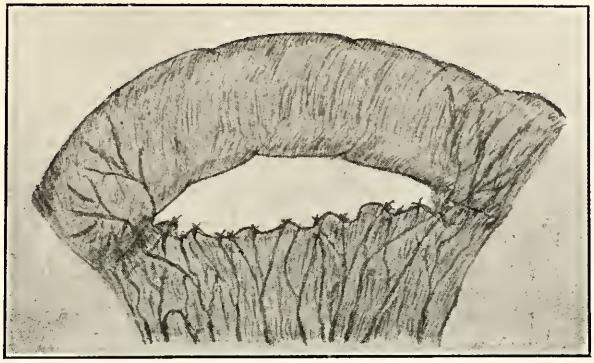


Fig. 1—Drawing shows mesentery separated from intestinal loop with vessels tied off illustrating condition in clinical cases dealt with; also as produced in experimental cases.

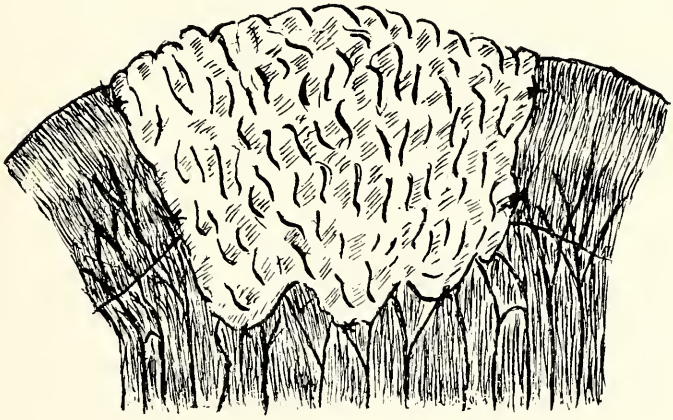


Fig. 2—The mesentery has been sutured back to the intestine and the omentum tacked around the damaged loop and tacked in position as was done in the clinical and experimental cases.

THE CONSERVATIVE TREATMENT OF INTESTINAL OBSTRUCTION

ALBERT W. JAMES, A. B., M. D., THE HAMLET HOSPITAL, HAMLET

By conservatism in connection with this subject, we propose to deal with the radical treatment of this most important surgical entity in a radical way, but employing conservative methods of approach and treatment.

I will not go at length into the details of the diagnosis of intestinal obstruction, but will confine my few remarks to the cases of intestinal obstruction which come into the hospital with the diagnosis written upon the face of the patient, and those cases of intestinal obstruction which develop after abdominal section, for the most part in which drainage has been used. The stereotyped case of intestinal obstruction which has become moderately advanced is fairly easy of diagnosis. It is the phase preceding this, before the patient has approached a status finalis, which we are mostly concerned with. Continuous vomiting after abdominal section, which does not yield to the ordinary methods of treatment, such as gastric lavage, abstinence of liquids by mouth, colonic irrigations, etc., should put the surgeon upon his guard that an impending condition of intestinal obstruction is present. A rising pulse of wavy character, a pinched, anxious expression of the face, restlessness of the patient, and a clammy skin, should warn him that something radical must be done. In other words, this is the point where the surgeon is in doubt as to the diagnosis of intestinal obstruction, and it is at this point where the conservatism of the treatment of his condition comes in.

The formal dictum of "when in doubt drain" can very well be modified to apply in this condition, to "when in doubt, do enterostomy." It is at this point, the point of doubt, that radical measures must be instituted if the patient's life is saved.

The prophylactic treatment of intestinal obstruction may be started in the operating room before the patient is removed from the table by washing out the stomach thoroughly with sodium bicarbonate solution. Hard, non-flexible rubber tubing in drainage cases is a measure never used, instead soft cigarette drains are placed in areas where the operator thinks they will likely cause the least trouble. If stab drainage in the mid-line is used, the drainage tube is often placed deep into the pelvis behind the bladder. It may be only necessary for this drain to extend slightly beyond the peritoneum. However, if it is necessary to carry the drain deep into the pelvis, behind the bladder, it is apparent that the small intestines will fall by the force of gravity of the Fowler position, if the patient is so placed after operation. Recognizing the theory upon which the Fowler position is advocated, and granting this is true, we do not think the extreme Fowler position is a wise measure. If a patient is placed in the almost upright position, which constitutes the Fowler

position, there is an added force of gravitation which forces the small intestines down into the pelvis and cul-de-sac about the drainage tube, pre-disposing to kinking with intestinal obstruction.

Having decided upon operative measures for the relief of the condition, what is done? Gastric lavage is continued by assistants during the period of preparation for operation. The patient before us can well be likened to a drowning man clutching at a straw, where every movement and every muscular exertion is a supreme task upon a fast ebbing vitality. To conserve this vitality it has been our practice to operate upon these cases in the patient's room, the patient not removed from bed. Novocaine one per cent is the anæsthetic used. In certain cases of intestinal obstruction developing post operative, the incision of the initial operation is opened and the work done there through. In other cases, an incision is made over the tumefaction, or more prominently distended portion of the intestine, if such be present. The peritoneum being open, the first loop of distended intestine is gently grasped and brought into the wound. No attempt is made to search for and find the cause of the obstruction. We believe that to do such is to jeopardize the last remaining chance of the patient. If the patient has vitality enough to withstand the enterostomy operation, he will come back to a state of increased vitality and vigor where the cause of the obstruction can be remedied in a subsequent operation. On account of distension, which is usually present to a marked degree, the intestine is often so ballooned and stretched that it is dangerous to use the rubber tipped intestinal forceps to handle the intestine for fear of perforation. The intestine is best handled with the gloved fingers of the operator. A purse string suture of Pagenstecher is placed in the intestine, the intestine is then anchored to the peritoneum and an attempt made to seal off the peritoneal cavity from contamination. The intestine is then opened and fenestrated rubber drainage tube inserted for a distance of three or four inches, after which the purse string sutures of Pagenstecher are placed about the tube to insure against leakage. Through and through sutures of silk worm gut are used to close the skin and muscle. The drainage tube is connected to the drain bottle at the side of the bed.

If shock has developed during the operation, immediate blood transfusion should be done, either during or immediately after the operation. Repeated gastric lavage kept up for two or three hours. Saline solution is administered by hypodermoclysis and proctoclysis. Glucose and sodium bicarbonate are usually added to the rectal drip. After five or six hours, often times before, the drainage tube starts to function, draining off the intestinal contents.

If the operation has been a success, and the vomiting has stopped, the patient will be able to retain liquids by mouth after twelve to eighteen hours, when liquid diet of hot thin soups, black coffee and tea are given. These are gradually increased until the patient can take a soft diet, adding thereto until regular diet can be assimilated.

In some cases the first enterostomy fails entirely. If such is the case, it is obvious that the operation has fallen short of the end

desired, and a second enterostomy is performed as before, the patient not being moved from his bed.

The after care of such a case differs little from that of the ordinary abdominal operation, except that the introduction of fluids into the body must be watched very carefully by skin and by rectum, a minimum of 1500 c.c. is introduced after twenty-four hours. If the patient is not gaining ground fast enough, transfusions of citrated blood should be resorted to as often as three times a week.

The repair of the enterostomy is carried out at any such time in the future when the general condition of the patient warrants such procedure. The good results of an otherwise successful operation may be entirely frustrated by being too hasty to close the intestinal opening. We have known of cases where the intestinal fistula of its own accord closed off spontaneously, and the bowels moved normally without the secondary enterorrhaphy. In performing this secondary operation we usually employ novocaine as a local anæsthetic.

To summarize, we might say the conservative treatment of intestinal obstruction lies in the following:

1. In drainage cases, after abdominal section, the use of soft cigarette drains, instead of hard, non-flexible rubber tube drains.

2. Extreme Fowler position is never used, although the Murphy treatment of peritonitis is resorted to with the continuous proctoclysis.

3. Mid-line drainage, where the drainage tube goes behind the bladder is a predisposing cause to intestinal obstruction.

4. The operation is performed with minimum exertion in transporting the patient by doing the operation on the patient in his bed.

5. Repeated gastric lavage before the operation, during the operation, and afterwards, is a measure of paramount importance.

6. Transfusion of blood is helpful, and it may be beneficial to resort to repeated transfusions. The introduction of large quantities of fluids into the body to combat surgical acidosis is an important therapeutic agent.

7. Of utmost importance it is to remember that if the first enterostomy fails, to do a second.

8. Last, do not be in too big a hurry to do the intestinal repair of the fistula.

DISCUSSION

Dr. C. I. Allen, Wadesboro: I want to express my appreciation for the excellent and instructive paper that Dr. Bost has presented to us. If further observation shows that he is correct in this, he will have changed one of the basis and fundamental principles of intestinal surgery. A few months ago I had a man with a gunshot wound of abdomen, in which three and one-half inches of the mesentery had been severed. Having heard of Dr. Bost's work, I repaired this injury according to his method and the man made a good recovery. Any man who can dispute a point in anatomy with Gray, and win, and who can change one of the basic and fundamental principles of

intestinal surgery as held by the leading surgeons throughout the world, deserves to be congratulated, and has mine.

Dr. R. L. Gibbon, Charlotte: I want to indorse what Dr. Allen says, for I think this paper of Dr. Bost's is a very important one. It certainly is, we might almost say, revolutionary. I have not had the nerve myself to try it; when in doubt I have always resected.

I want to congratulate Dr. James upon his paper on intestinal obstruction. These procedures are life-saving. As he has stated, it is almost like snatching a "brand from the burning." I infer that he was speaking very largely of the acute forms of operative obstruction. You know sometimes we get obstruction rather late, after a week or ten days, or possibly two weeks. In those cases I think it is better, always provided the condition of the patient will permit it, to go through another operation, to make a second incision. These later obstructions are due to more or less dense adhesions, but to do a simple enterostomy would not relieve the adhesions. This reminds me of a case seen by Dr. Pressley and myself. He did an enterostomy but the obstruction was not relieved, and after a few days the condition of the patient was very desperate. I remember we examined him and thought of doing a second enterostomy, and had some difficulty in locating the right point. We did a second enterostomy and in a spirit of desperation, passed our hands down into the pelvis, and released a lot of adhesions. The patient immediately got relief. The obstruction was due apparently to adhesions in the lower pelvis. The point I want to make is that in these late obstructions there are more or less adhesions, and it is better to break them up. Enterostomy will give relief for only a few days. The same thing I think is true of abscesses; it is necessary to release the pus and relieve the pressure. In acute forms of ileus I think the experience of most of us is that when we do an enterostomy the distention is relieved and the patient gets well without any further trouble.

Dr. C. S. Norburn, Asheville: I would like to say a few words about Dr. Bost's paper, which is certainly most interesting.

The omentum is becoming of more and more importance in abdominal surgery. Charlie Mayo has resurrected the Billroth No. 1 from oblivion by using the omentum to tack over the suture line. He also draws an enterostomy tube through a hole in the omentum before bringing it through the abdominal wall, thus preventing leakage at this point. And we now prevent sloughing of the suture line in intestional anastomosis by wrapping the suture line with omentum.

It seems that it would be very important to determine just what takes place in these operations of Dr. Bost's. Does the omentum keep the devasculized piece of intestine alive, or does the intestine die and become replaced by fibrous tissue? Several cases of severe abdominal injury and of mesenteric thrombosis, which I have seen, appear to point to the latter. I remember that in one case the loop of intestine lay in a trough of thick inflamed omentum. When the loops was shelled out of this bed of omentum it was found to be gangrenous for

six or more inches, its contents having been retained by the surrounding omentum. Now if this is what really takes place when we wrap the devasculized gut with omentum it would seem that we are trusting to an uncertain process which would at the best leave several inches of scar tissue in the alimentary track. It would seem that if the patient's condition at all warranted it that it would be better to resect and wrap the suture line with omentum. On the other hand, if autopsies on dogs showed the loop to remain constantly viable, this procedure may be a most important find.

However, all this may be, it is certain that in cases where the shock is too great to risk a resection, the knowledge of this procedure of wrapping the devasculized loop with omentum is of the greatest value.

Dr. B. C. Willis, Rocky Mount: I enjoyed Dr. James' paper very much. I believe an effort should be made to find out if strangulation of the bowel is taking place in these cases of obstruction. In post-operative cases we would look for ileus in the recently operative cases, but in late secondary operative cases they should be searched for constricting bands causing obstruction and death of the bowel. If that is not looked for you will lose your patient anyhow. It is like operating for strangulated hernia, you would not think of doing an enterostomy and leaving the strangulated hernia in the sac.

Dr. Oren Moore, Charlotte: The question was raised by the essayist as to what caused the death of his dog. I was present at the operation, though I was not called in consultation as an obstetrician, but as an experimental surgeon. I feel certain, however, that the cause of her death was that Dr. Bost had not used Widal's hemoclastic liver test.

I also wish to say, seriously, that Dr. Bost's contribution today strikes me as being the high water mark of today's session in that it is an entirely new principle. No man who has been faced with the alternative of doing a resection or putting back the loop of intestine stripped of mesentery but will be relieved. This will give a great deal of comfort to us—in fact, I shall accept Dr. Bost's dictum.

Dr. R. McBrayer, Shelby: Just a word about Dr. Bost's paper. I hope the day will come when the State Medical Society will help a man like Dr. Bost, by subsidizing such work and then we will do greater things in a medical way.

Dr. James, closing the discussion: In these remarks made on enterostomy and intestinal obstruction my idea was to talk about just the acute cases, post-operative, and the moribund cases in which little can be done except enterostomy. In chronic cases I think we should look for the cause of the obstruction and remove it, if possible.

Dr. Johnson spoke of the Fowler position. I said we did not believe in that because it forces the small intestine down into the pelvis. We do use moderate drainage, by placing pillows under the

shoulders of the patient, allowing drainage by virtue of moderate gravitation.

Dr. Bost, closing the discussion: I wish to thank the gentlemen for their very kind references to me and their liberal discussion.

In answer to the question regarding the formation of contracting scar about the damaged loop, resulting in obstruction. The patients so treated have had no trouble. However, should this occur it could be dealt with at a more opportune time, so this offers no objection to the method.

I am very grateful to Dr. Moore, for accounting for the dog's death, as it shifts the responsibility.

I would say further regarding intestinal resection, if one would look over records in different hospitals and work done by different operators, it would be found that the results would be far from satisfactory. I am unable to say whether this is due to a faulty technique or to the pathology dealt with. Probably both are factors, but I should say the traumatic or pathologic condition for which a resection is usually done, is often a very grave condition itself and when the shock of a resection is superimposed the mortality will be much higher.

I recall that early in the war, the mortality from intra abdominal injuries was so high in the British Military Hospitals that a commission was sent out to investigate it. It was decided that too many resections were being done and they sent out a bulletin urging that resection be avoided wherever possible, and that simple closures of intestinal injuries be done instead, even though it caused considerable narrowing and angulation of the intestine. Following this the results were better and the mortality reduced. Therefore it is desirable, in dealing with mesenteric and intestinal injuries, to resect only in the presence of urgent indications.

I wish to take this opportunity to thank Drs. L. D. Walker and J. L. Ransom for administering anesthetics and coöperating with me in doing the experimental work.

THE THYROID

W. Marvin Scruggs, B. S., M. D., F. A. C. S., Charlotte

It is not the purpose of this paper to present any original findings with regard to the thyroid gland, but the wide dissemination of information on this most important subject and the changing attitude of our Thyroid patients, prompts me to direct your attention to the advanced knowledge of Thyroid disease and present for your consideration something of the cause, prophylaxis and treatment of Thyroid cases from the viewpoint of the surgeon. The literature during recent years has abounded with information on Thyroid investigation, and in my opinion there has been more progress in the last decade in the understanding of Thyroid disease, its pathology and treatment than in any other medical subject of equal interest or importance, and these painstaking investigations have been fruitful in

that they have given a clearer insight into the changes taking place in the gland, have permitted of an accepted clinical classification of the different types of goitre, demonstrated that certain types of goitre may be prevented, and as a result we now have a fairly well standardized and very promising method of handling these cases, be the indication medical or surgical.

The present advanced status of Thyroid therapy is due largely to the valuable contributions made by American internists and surgeons, especially the work of Crile and the Mayo clinic, which is now duplicated by competent surgeons all over the country, and has served to place the management of Thyroid cases upon a plane to which we can point with pride.

In addition to these advances, one of the most important steps has been the efforts directed toward the prevention of simple goitre, and with our present knowledge of the function of the Thyroid we can readily appreciate the statement of Marine, when he says, "Simple goitre is one of the easiest known diseases to prevent." With this statement in mind, it behooves us as medical men to familiarize ourselves with the physiologic and chemical conditions underlying the prevention of goitre, especially of the adolescent type.

We are all aware that simple goitre may appear sporadically in any locality, but it is also especially associated with certain regions or districts, and in that portion of the United States along the great lakes, and the Pacific Northwest the incidence of goitre is very high. This being true, Marine and Lenhart were prompted to pursue their investigations, and demonstrated the very definite relation of the iodin content of the Thyroid to the cellular hyperplasia and glandular hypertrophy, Bauman in 1895 having first recognized that the active principle of the Thyroid was a very stable compound of iodin, the percentage of iodin present in the individual Thyroid being variable, but there is a quite constant minimum percentage which is necessary for the maintenance of normal or colloid gland structure, and that if the iodin content falls below 0.1% active hyperplasia begins.

With this knowledge, and the frequency with which goitre develops in adolescence, the first application of this principle of goitre prevention was instituted in the public schools of Akron, Ohio, in 1916. A careful examination of the Thyroid of each girl from the 5th to 12th grade was made and recorded once each year. In the first examination 56% of these girls were found to have enlarged Thyroids. The mode of prevention used was the administration of 3 grs. of Sodium iodide in the drinking water once each day for two weeks, each Spring and Fall, permission from the parents or guardian being necessary to allow the girl to take the dose. Of those taking the prophylactic dose, not a single girl developed Thyroid enlargement or goitre. Among those not taking iodin as a preventive 27.6% of those without goitre in the beginning developed goitre. The goitre disappeared in over 60% of the girls with goitre at first, and who took the prophylactic dose of iodin, and among those who had goitre at first, and did not take iodin, the enlargement *disappeared in very few.* This method has been employed in other goitre districts, and from these experiences, and

from our observations in our own practice, we believe that if the cases seen during adolescence are kept saturated with iodin, goitre will not develop.

In the consideration of the hyperplastic changes involving the Thyroid I know of no term that is more confusing than the term goitre, and *Plummer* after the study of thousands of cases has done much to clarify the situation and to eliminate confusion by giving as a simple classification, based on sound pathological basis, and it is the proper recognition of the different types of goitre that is more important to the general practitioner than the type of treatment, and in the succeeding discussion based on the pathology described and the physiological changes observed, the following types of goitre will be considered:

1. Colloid.
2. Adenomatous.
3. Exophthalmic.

1. Colloid goitre is distinctly a goitre of youth, is seen most frequently in individuals between the ages of 18 and 25, and rarely in persons over 30. It is in this type that we have an increase in intra-alveolar colloid, the acini being dilated and filled with colloid material. This type of goitre produces a more or less uniform enlargement of the Thyroid gland, including the isthmus, and on palpation may impart a distinct granular sensation to the examining finger. In this type of goitre the individual is often nervous, and may have a rapid pulse, and often partakes of many of the characteristic signs and symptoms of a true exophthalmic goitre. As suggested by Sistrunk, these cases may be differentiated by the metabolic rate, which is normal, or may be slightly below normal, and usually produces no symptoms other than anxiety or worry over the presence of the enlargement. These cases are not usually to be classed among those demanding surgical intervention. Their treatment consists of a frank explanation to the patient of their condition, elimination of possible sources of worry and anxiety, the administration of iodin (or thyroxin), and watchful waiting, and if they do not tend to improve then it is possible that we are dealing with a mixed type. The use of the X-ray in this type of case is a hazardous performance and in my experience only tends to stimulate these glands to greater activity, and certainly no conscientious surgeon should operate on them at this stage.

2. Adenomatous.

By far the commonest type of goitre that we have to consider in this section of the country is the adenomatous, the enlargement being due to the growth within the gland of adenomas. It is this type of gland that rarely produces toxic symptoms in the early stages, but Plummer has found that 23% of these cases later produce toxic symptoms, but usually after the goitre has been present for many years. When toxic symptoms do appear in this type of enlargement, the metabolic rate is increased, but not attaining the high rate manifested by the exophthalmic type, the mild, long continued hyperthyroidism of the adenomatous type affecting the cardio vascular system, whereas

the nervous system suffers more profoundly in the exophthalmic type. This type of goitre assumes oftentimes enormous size, and are readily recognized by their irregular appearance, the Thyroid being asymmetrical, and on palpation may be nodular, very hard, or cystic, depending on the degree of degeneration that the gland has undergone.

The treatment of adenomatous goitre in most instances is surgical, depending largely on the age of the patient, size of the gland, and relative degree of toxicity. There is a feeling among some surgeons that these cases are best not operated on early, unless giving troublesome pressure symptoms or symptoms of increasing toxemia are manifest. However, I usually advise operation if the adenomas are of much size, for it seems better surgery to advise removal before they have attained great size, and in addition they run the additional risk of developing toxic symptoms later if not removed. When properly operated, and sufficient diseased gland removed, these cases usually secure immediate and lasting improvement after operation.

3. Exophthalmic.

In the exophthalmic type of goitre we have to deal with a hyperplastic growth of the epithelial cells, which is usually general throughout the gland, usually causing a marked enlargement of the gland, while in other cases it may not be particularly enlarged, and is usually not nodular. This type of goitre is most frequently encountered during the third and fourth decades, but may be seen at most any age. The symptoms may appear very acutely, or develop very insidiously, but present a clinical syndrome with which we are all familiar, and I regret time does not permit of an elaboration of the clinical picture presented by these cases, but as a rule the symptoms, such as nervousness, tachycardia, tremor, loss of weight and strength are indicative of the *onset* of *hyperthyroidism*, and are even present at times before there is any noticeable enlargement of the Thyroid. Many of these cases will develop a very rapidly forming thyrotoxicosis, and present the picture now known as "*Thyroid crisis.*" Most cases, under proper treatment, will tide over the early, initial crisis, and pass into a period of improvement, but unless proper intervention has been instituted this crisis will recur, often with disastrous results, or at the best terminate in chronic invalidism.

This condition is one easily recognized by the presence of the classical symptoms, the presence of an enlarged gland, the enlargement usually affecting the gland symmetrically, and an increased metabolic rate. In this connection, I want to say just a word about the importance of basal metabolism determination, with reference to the diagnosis and treatment of Thyroid diseases. This test offers a fairly reliable gauge for treatment, helps to determine the progress of the case, and oftentimes diagnoses the doubtful case, but I want to warn against depending too much on the laboratory findings, for, if we do, we are going to miss the clinical side of the picture which is often more important, and a most helpful guide as to method of treatment.

The treatment of exophthalmic goitre is one that has evoked much discussion, and does call for discriminating judgment, as it may be

medical or surgical or both, but I am convinced that in most cases best results are obtained through surgery. In cases that are seen early, before any of the vital organs have become damaged, operation may be performed with relative safety. Acutely ill cases are dangerous surgical risks, and it is often necessary to tide them over for a while by rest and careful nursing, or when the condition had existed till vital organs are damaged, preliminary ligations of the Thyroid arteries will be indicated, often gives a brilliant result, and in many cases offers a splendid index as to reaction to be expected from the more formidable operation of removal.

These cases should always be subjected to careful examination and study, and if this is done, and proper time for operation selected surgery offers a very promising outlook for the patient, but should be done as early as possible, for while operation stops hyperthyroidism it cannot repair the damage already done to the vital organs. The clinical study of the case will make clear the indication whether they be surgical or medical, or X-ray.

There are certain cases that always require operative intervention, irrespective of what our opinion may be as to the desirability of goitre operation in general, and from my standpoint the most important thing for me to know is whether the goitre is non-toxic, or toxic. The former requires little or no preparation, in the latter an adequate preparation may mean the difference between success and failure. The operation itself when properly done is almost free from danger in most instances, in fact, is one of the safest and most satisfactory of all major operations. We should determine our mode of operation, or the procedure to be followed, by a consideration of all the signs and symptoms taken together, and not be too strongly influenced by any one thing alone.

Absolute rest in bed, freedom from worry or fear, plus securing the patient's confidence, often is sufficient, but when the symptoms are severe it is necessary to resort to more energetic measures, and the application of ice to the throat and chest, plus mild sedatives has been very useful in my hands.

There is still much controversy over the best means of inducing anesthesia in operation for goitre, and one is best guided by the individual case. Personally, I operated more than fifty per cent of my cases under local anesthesia, preceded by morphia, but there is no doubt that in certain cases general anesthesia adds much to the facility of operating, and to the ease of mind of the patient. Hemorrhage must be controlled adequately, injury to the nerve avoided, and the operation done as quickly and smoothly as possible so as to spare the patient as much as possible, taking care to remove enough tissue, and this is better accomplished by removing some of both lobes, not only for cosmetic reasons, but it also avoids leaving diseased tissue in toxic cases.

DISCUSSION

Dr. J. D. MacRae, Asheville: I can speak with a high degree of admiration of Dr. Scrugg's skill as an operator. I had the pleasure

and satisfaction of working over against him in the removal of foreign bodies in the hospitals in France, and I know of his skill. Dr. Scruggs, therefore, is competent to speak from the surgeon's point of view. I do not believe he gives quite the credit to radiology that it is entitled to in the treatment of toxic goitre. The radiologist does not expect to deal with colloid or adenomatous goitre with the success that surgery does, but the results in the hands of skillful men have been sufficiently good to justify its use in those cases of hyperthyroidism, of which we see a great many. It is not an infrequent thing to see patients who have been diagnosed as tuberculous and who have for that reason come to Asheville for their health who, upon a careful examination, are found to be suffering with hyperthyroidism. They are borderline cases. It is known to radiologists that the thyroid gland is one of the most sensitive tissues to X-ray or radium. The fact that the gland is over-active and the fact that the X-ray or radium can reduce and does reduce the secretion of the gland make it, then, logical to apply these agents for the reduction of the patient's symptoms. A large percentage of such cases will be relieved. Dr. Scruggs does not advance the argument which I have so often heard advanced, that if radiation fails surgery is made more difficult, but it has been so often said that I shall speak in opposition to it, because I have been impressed with the fact that surgeons who have taken the opposite stand have frequently done it from observation of cases where radiation has been so vigorously applied that there has resulted a degree of X-ray effect which is undesirable. It is no more right to compare or to use in this study the cases of surgical treatment of thyroid disease which are unskillful than to include those cases in which overdosage has been given and burns have been the result. It is known that rest is one of the main methods of relieving symptoms. It is possible to produce a hypothyroidism with X-ray or radium. It is therefore necessary to proceed with caution, but many cases may be spared operative interference and, I might say, cured, at least relieved, by the use of radium or X-ray.

Dr. R. McBrayer, Shelby: I rise to say a word or two about the cases that are borderline, and the goitres in young girls. It is quite true, as Dr. Scruggs says, that we must have a certain amount of iodin available in the body for the manufacturing of sufficient thyroxin by the thyroid gland to result in a normal thyroxin output. It seems to me there is another etiology connected indirectly, probably, with goitre in the young, and especially its symptoms as seen in the older people. That is in this way: (and it seems to me that if we remember this the prophylaxis of goitre might also be added to). There is no doubt that the thyroid gland indirectly at least aids the body very materially in the combating of infection. We see that so much in tuberculosis, and see it in other instances of low grade focal infection, particularly so at times in young girls. When there is infection in the body more work must be done by the body cells. When they do more work they must have a faster rate of metabolism; in other words, an increased rate of metabolism is demanded when we are living our lives and at the same time combating some daily

present infection. We might think, and it is probably true, that in that respect the thyroxin is the pacemaker. Therefore, especially in the young and in the borderline cases of which Dr. MacRae spoke, or in the very mild cases that respond sometimes to medical treatment, there is something going on in that patient's body that is demanding an increased thyroxin output, which, of course, means increased work on the part of the thyroid gland, and if there are not enough cells in the thyroid gland to meet the demand, the thyroid, under that demand, will increase its number of cells and we shall begin to get a slight enlargement. In our prophylaxis of goitre it seems to me that this is a point well worth considering.

Dr. L. A. Crowell, Lincolnton: I remember the time when we first began to have clinics over the country, every clinic had its own nomenclature, and it was such a mixed up thing that you did not know where you were. All goitres can be classified under three heads, adenoma, colloid, and exophthalmic. Ninety-six per cent come under those three heads, and the others are mixtures of the three. I think it is important for the general practitioner to be able to distinguish between these classes, for, while the giving of iodin will cure a colloid goitre, on the other hand, the giving of iodin may convert an adenoma into an exophthalmic goitre. I think we should do as Dr. Scruggs said, get hold of these cases and get hold of them early, because if they develop rapid pulse and other things that go with exophthalmic goitre our results in surgery will certainly be bad.

Speaking of metabolism, I have not much faith in a great many machines that are being used to get the metabolic rate. They have been checking up at the Mayo's some machines on the market, checking them up with the machine they are using, and found them inefficient. I think it better to have a good machine or none at all. I heard Dr. W. J. Mayo say he would not depend upon the metabolic rate as to whether or not he would operate, but if the patient can go upstairs and back without increasing the pulse to a marked degree he would operate on him. Now, I believe there are a great many people in this country who are hypothyroid, and it is in these cases that the machines for taking the metabolic rate are of special value. It is wonderful what results we get in those cases by giving thyroid extract, but we can not give thyroid extract intelligently unless we have the use of a good metabolic machine.

Dr. J. D. Highsmith, Fayetteville: I would like to say a few words in regard to the preparation of the patient suffering with hyperthyroidism by means of ligation—ligation first on one side and, about a week or ten days later, ligation on the other side. I think in this way we can take the borderline cases and greatly reduce the mortality. After ligation the patient can go on for several months or longer, and then you can pick your time for the thyroidectomy.

Dr. Scruggs, closing the discussion: I am very grateful to the men for their remarks on this subject. The thyroid, to me, has always been a very interesting subject, and what Dr. Highsmith has called

attention to has been very interesting to me. A great many of these hyperthyroid cases will come for treatment who do not appear to be very good surgical risks, and we do just what he has suggested—a ligation of the superior thyroid vessel.

Dr. MacRae very kindly commented on X-ray therapy. I intentionally said very little about it, but hoped it might provoke some discussion. I feel very kindly in certain cases toward radiation. Personally, I have never seen that it increases my difficulty in operating where these cases had had skilled radiation. There are certain cases, certainly, in which radiation helps after operation. I think that applies in thyroid conditions just as well as in malignant conditions in other parts of the body. The really severe exophthalmic goitre is really a malignant condition, it is a toxic condition, and I think in certain cases the X-ray is very valuable, though I think the best results in these cases can be obtained through surgery, provided the cases can be seen early.

SACRO-ILIAC DISEASE

Hugh A. Thompson, M. D., Raleigh

Pain in the lower back has been a problem, doubtless, since man became a biped. Many explanations of this pain have been offered, and much controversy about it has arisen among the members of the medical profession. Probably most of the disagreements are due to specialization in work. A physician, who sees mainly a certain class of case, tends to approach any given case with his ideas somewhat biased by his previous experience. Thus the gynecologist looks for a gynecological explanation of backache; the internist for a medical, and the orthopædist for an orthopædic cause. All of these are sometimes right, but if we, as practitioners, are to be successful to any high degree, we must spare no pains to arrive at an accurate diagnosis—in backache, as well as in other things.

My subject, sacro-iliac disease, is one fairly common cause of pain in the lower back. However, some excellent members of the profession practically deny its existence, or at least say it is very rare. The difference of opinion seems to be due to this: minor grades of sacro-iliac disease are not objectively demonstrable, either by clinical examination or by X-ray. The diagnosis must be made, largely, from history, symptoms, exclusion, and by therapeutic tests. Advanced pathological changes in the joint, which can be shown definitely by X-ray are rare. For instance, gross dislocation requires unusually severe trauma for its production, and in the cases where it does occur, the patient usually dies from his injuries, so the dislocation of the sacro-iliac joint has no clinical importance. Advanced osteo-arthritis of the joint is practically always associated with the same condition throughout the whole lower spine. Tuberculosis of the joint is uncommon, except as an extension of low lumbar disease. Tuberculosis feeds on motion, and there is not much motion in the sacro-iliac joint. Thus we see that conditions which have definite X-ray pathology, are

rare, and so are of relatively small clinical importance. The cases that are frequently met with show little or no X-ray changes. Some years ago, I had a series of over a hundred patients, with supposed sacro-iliac trouble, examined by X-ray, and not a single one showed any definite abnormality in the radiograms. In spite of the small pathological alterations, however, much crippling can and does occur from sacro-iliac disease, so it is worth while to be able to treat these cases successfully.

The diagnosis is based first on the patient's account of his condition. There is usually a history of trauma, particularly a twisting movement of the trunk, as from lifting a weight, with the body in an awkward position. Similar movements cause sharp pain. Pain is not infrequently referred along the course of the Sciatic nerve. In some cases, crossing the bad leg over the good one, causes marked discomfort. These symptoms are localized pretty definitely, centering in one or other sacro-iliac joint—not both.

Examination shows tenderness over the affected joint. Too much attention should not be paid to this, however, because the tenderness may be in the overlying soft tissues. A much more valuable test is flexing the hip with the knee extended. This maneuver causes a rotation of the ileum on the sacrum, and will produce pain, if the joint be diseased. In making this test, pain in the ham-strings from stretching is not considered. It is a question of pain in the joint. In acute, or severe chronic cases, it will be observed that there is a definite list of the entire trunk away from the affected side. In long standing cases, this list may become a scoliosis. This is known as the "Sciatic list," and is always more marked in cases having a definite sciatica associated. This same abnormality of posture is noted by the patient, who often says one leg is shorter than the other. Of course this is not true. It is merely a question of a tilted pelvis. Some of our sectarian friends say the leg is short, because the hip is out of joint—and that absurd explanation seems to be very satisfying to many patients.

The symptoms, as here described, are not found in backache from muscle sprains, bad posture, spinal disease, visceroptosis, displaced uterus, genito-urinary disease, and so on. It will be noted however, that we have to depend largely on what the patient says, therefore we must be especially watchful, if there be any reason for malingering. In one case, which I examined for a railroad, after having seen the man several times, over a period of eight months, I finally gave it as my opinion that he had a sacro-iliac injury, which would require operation. The patient readily agreed to have the operation, and this made me feel even more certain of his sincerity. The railroad authorities decided to settle his claim out of court, first, and this they did for the sum of $8,000.00 After getting the money, the patient made an almost immediate recovery. Unfortunately, this form of treatment is rarely available.

We hear a good deal of "recurrent sacro-iliac sub-luxation." Is there such a condition? I do not know. I feel satisfied that it is not demonstrable by X-ray. In one very excellent patient, who seemed

to have definite clear-cut symptoms, indicating a repeated slipping of the joint, Dr. Noble was able to get X-rays, when it was "out," and when it was "in." The X-rays were exactly alike. Yet this patient had had long experience with the trouble, and there was no doubt in her own mind that she could tell exactly when it slipped out, and she certainly got immediate relief from manipulation, when it supposedly went back in. Subsequently it slipped out so often, in spite of constant use of a belt, that she was completely disabled. After a long period of rest in bed, without benefit, I arthrodesed the joint, and she has gotten well. This is the only case I have seen, where I felt that sub-luxation probably did occur. All the others, excepting the severe traumatic cases, could be divided into three classes, viz: sprain, relaxation and arthritis. The sprain cases should all get well with rest and mechanical support for a few weeks; the relaxation cases require prolonged mechanical support, and even then a few will not recover without operation; the arthritis cases require the same treatment as for arthritis elsewhere, and, if properly treated, over a sufficient period of time, most of them will recover. In the event that conservative treatment fails, in any of these cases, arthrodesis of the joint offers a satisfactory solution of the problem.

Up to date, I have had to do an arthrodesis in only five cases. All of these were completely disabled for months, in spite of conservative treatment. I feel that one should be able to decide, almost at once, whether a given case will have to be operated or not. To do this accurately would save the patient a great deal of time and suffering. I do not feel that I can tell, until conservative treatment has been given a thorough trial, and I have known of one case, where a very eminent orthopædic surgeon advised operation, and where the patient made a complete recovery without it.

The operation which I have employed is that of Smith-Peterson. So far, it has proven eminently satisfactory in my small series of five cases, all of them having made good recoveries.

DISCUSSION

Dr. William Scruggs, Charlotte: I enjoyed hearing this paper, as I have followed with quite a good bit of interest Dr. Thompson's work along this line for the last few years. This type, of course, is one that we frequently encounter and one that gives us no end of difficulty. Our experience with these cases from the operative standpoint has been very, very limited. I think all of us from time to time see these cases, and it is a real problem to know what to do for them. There has been quite a little discussion for the last year or two in my section of the country about the treatment of these conditions, and a number of men have taken the stand of doing a rather radical operation on this type of case. I want to ask Dr. Thompson if he will give us his observation and experience, and his opinion, about the value of bone grafts in this type of case. To me it seems a rather radical procedure. I arose just to ask Dr. Thompson what his opinion of the advisability of a procedure of that kind is, and, if he does approve of it, what results have been obtained.

Dr. T. E. Wilkerson, Raleigh: I would like to say a few words in regard to Dr. Thompson's paper, because I have been associated with him in two cases that he did for me. Of course, I will not attempt to answer Dr. Scruggs' question, but will leave that to Dr. Thompson.

One of these cases was a woman that had been delivered with forceps six months prior to the operation and who had not been able to walk since the delivery. Dr. Thompson operated on her with complete recovery. She weighs about two hundred and thirty or forty pounds, and is able to walk all right. The other case was a man with one arm, a rather pitiful-looking specimen of humanity. He was going from pillar to post, walking with a stick. He fell into Dr. Thompson's hands, and he did this operation with complete success.

As I say, I can not answer Dr. Scruggs' question in regard to sticking a piece of bone into a person who complains of backache, but I do know, in the two cases in which I have seen this operation done it was a needed operation, in both cases, with splendid results.

Dr. Benj. J. Lawrence, Raleigh, Chairman: In our section of the State the courts have been very much interested in this question, and the railroads are tremendously concerned, of course. I know all of us have more or less interest in it, and I will be glad to hear a free discussion.

Dr. Thompson, closing the discussion: In reply to Dr. Scruggs' question, I think to operate on these cases routinely or anything like routinely is not giving the patient a square deal. One very definite reason for that is that a low spinal arthritis is very common, and it is not an uncommon thing to have such a condition affecting the sacro-iliac joint. Those cases should not be operated upon until they have had proper conservative treatment. So far as I am able to tell, the Smith-Peterson operation does not do any harm. It consists of cutting a window through the ileum and coming down to the joint and scraping off the synovial covering of the joint. You do not do any transplanting of bone, but just use the plug you cut out of the ileum. The loss of motion does not do any harm. If you do the operation the patient has to be in bed six weeks, and six weeks more in getting up and around. There is practically no danger to life, but a man does not want to lose twelve weeks' time unless it is absolutely necessary. I think there is no special objection to this operation other than the loss of time, but of course there is some danger in any operation. I think these cases are of particular importance from a railroad standpoint, or court standpoint, because of the fact I tried to bring out, that you have to go by what the patient tells you with regard to his symptoms. We have had some very interesting experiences here in Raleigh, particularly in the case of one man who went to a doctor who said he could diagnose any case. The man put on an adhesive plaster, learned the symptoms, and went around to the expert who made a diagnosis of sacro-iliac disease and gave a written statement to that effect. Then the man came up in court and said

he did not have anything. I have always known that I could not tell except by questioning the patient. Unless we get a whole lot better than we are now I believe we have to observe these cases for a long time before operation, in justice to the patient.

REPORT OF AN UNUSUAL CASE OF ECTOPIC PREGNANCY

Moir S. Martin, M. D., Edward C. Ashby, M. D., Mount Airy

In this report we will attempt to give you the main points in a case which has been very interesting to us.

CASE NO. 3342. A. D. Female, negress. Married, age 30. Admitted to M. M. Hospital, December 9, 1922.

CHIEF COMPLAINT: Tumor, pain and soreness in abdomen.

HISTORY OF PRESENT ILLNESS: Patient states that she has not been at all well this year and thinks that she is pregnant. In January (ten and a half months ago) she had her last normal menstruation. In February and March she had a very scanty flow about the time for her menstrual periods and in April at the same time she had a slight bloody discharge attended by severe "abdominal cramps" for which her doctor gave her a hypodermic. Since then she has had no bloody vaginal discharge until about six weeks ago when she thought she was in labor, having severe abdominal pains which she states "seemed to work up." Has been confined to bed ever since suffering with pains in abdomen, nausea and vomiting, and has had a scanty bloody vaginal discharge, also says she had milk come in her breasts. Since April has had a steadily growing abdominal enlargement and says that she felt fetal movements from the early part of June until she was taken sick the last of October.

PAST MEDICAL HISTORY: Unimportant except that she was in a hospital in West Virginia for one day eight years ago suffering with female trouble for which an operation was advised but refused and after about six weeks she recovered and has been well since until the present illness.

MARITAL HISTORY: Married twice. Two children by first husband, the first died a few hours after a normal delivery and the second is now 14 years of age and well. Married the second time 11 years ago and has one child nine years of age by second husband. No miscarriage.

MENSTRUAL HISTORY: Menses started at 14 years of age, having been regular and has scarcely any pain or discomfort. Four days duration.

FAMILY HISTORY: Unimportant.

PHYSICAL EXAMINATION: Temp. 101.4; Pulse, 120; Resp. 24; Blood Pressure, 130-84. A fairly well nourished negress of a ginger cake color, looks to be 30 to 35 years of age. Lies on her back quietly in bed having an anxious expression, looks hollow eyed, tongue is coated and breath foul. Chest shows nothing abnormal except an irregular rythm of the heart. A beat is dropped every few beats with no regularity as to the number of beats between. No murmurs are heard and there is no appreciable enlargement of the heart.

The abdomen is greatly enlarged showing the characteristics of pregnancy at term and the fetal parts can be outlined by palpation with the head at the pelvic

inlet and the back to the left. No fetal heart sounds are heard and no placental bruit. Vaginal examination reveals a rather soft cervix for pregnancy at term and no effacement. There is a foul bloody vaginal discharge. Urine is negative save for an occasional hyaline cast.

DIAGNOSIS: Pregnancy at term, probably ectopic, with a dead fetus.

Operation December 11, 1922, Ether anæsthetic. The cervix was dilated and finger introduced into the uterus which was found to be empty and anteflexed with the fetus above it. Laparotomy, left rectus incision revealed an abdominal pregnancy, the amniotic sac being opened without getting into the general peritoneal cavity. A dead male fetus weighing 8 lbs., 10 oz., showing beginning maceration, was removed. The placenta was found to be attached along the left wall of the pelvis. The cord, some of the macerated placenta and membrane where they peeled off easily without causing bleeding, was removed, and the wound closed using three tubes for drainage of the cavity. The patient left the table in fair condition.

She made a good post-operative recovery save for a very foul smelling purulent discharge from the wound. After the first week the cavity was flushed with Dakins Solution every two hours until she was discharged from the hospital December 30, 1922 (nineteen days after operation). The offensive discharge continued and she was re-admitted to the hospital February 3, 1923, and Dakins Solution again used in the wound without any result and on February 19th, under local anæsthesia the wound was reopened and the cavity and sinuses swabbed out thoroughly with pure carbolic acid followed by alcohol and the cavity packed. At each dressing, every other day the cavity was swabbed out with carbolic acid and the alcohol for nearly a month, when patient was discharged from the hospital March 17th, with the wound healing, but it required another month before the wound was completely healed. In other words, it required four months for the complete healing of the wound.

READMITTED TO HOSPITAL JANUARY 19, 1924. (9 months later.)

SUBSEQUENT HISTORY: Periods reappeared in May, 1923, and were regular and normal for five months and was in good health until October, 1923, when she had a profuse bloody vaginal discharge accompanied by cramp like pains in lower abdomen, nausea and vomiting and has not been able to do anything since. The bloody vaginal discharge persisted for nearly a month and she has had no discharge until the day before admission (January 19, 1924), when it reappeared and was accompanied by severe pains across the lower abdomen and especially on the right side. She has been nauseated and has vomited almost daily since October and it is worse in the morning.

PHYSICAL EXAMINATION: Temp. 98.4; Pulse 100, intermittent; Resp. 20; Blood Pressure, 140-100.

Abdomen appears to be slightly distended and shows a broad but firm scar of the former left rectus incision. There is considerable sensitiveness over the entire abdomen and especially over the lower right quadrant. No definite muscular rigidity. An ill defined mass can be felt extending upwards from the pelvis nearly to the umbilicus on the right side.

Pelvic examination reveals a rather sensitive mass in the culde-sac and a rather soft cervix.

Urine: Negative, save for a tinge of albumen.

White Blood Count: 12,000 with 85% polys.

Provisional Diagnosis: Ectopic pregnancy (right).

Operation: January 21, 1924, Ether Anæsthesia. Right rectus incision revealed bloody fluid in peritoneal cavity. There was a mass in pelvis and extending up nearly to umbilicus with omentum and intestines adherent to it, which when separated proved to be an ectopic pregnancy which had partially ruptured and had a large organizing blood clot near its placental attachment which was in the neighborhood of the fimbriated extremity of the right tube and the right ovary was intimately adherent to its attachment. There were no adhesions to the old scar. On the left tube in its outer third there was a small papillary appendage about an inch in length which was probably the seat of the former ectopic pregnancy. The right tube and ovary with the ectopic pregnancy was removed and also the left tube. There was quite a little hemorrhage from the base of the broad ligament and the side wall of the pelvis on the right where the placental attachment was located and it was necessary to pack this to control the oozing and the end of the gauze was surrounded with rubber tissue and brought out the lower end of the incision. The patient was considerably shocked by the operative procedure and the hemorrhage, and it was necessary to give her a pint of salt solution under the breasts while on the table. The fetus was alive at the time of operation, was a male, and measured 6 inches in length.

She made a good post-operative recovery and left the hospital in good condition February 12th, (22 days after operation).

In this case we have a history of pelvic inflammatory trouble followed by eight years of sterility then probably a tubal pregnancy on the left which ruptured about the third month, converting a tubal into an abdominal pregnancy. The rupture was of such a nature that the placental attachment was not greatly interfered with and she goes on to term, when she has abdominal cramps, a bloody vaginal discharge, and she thinks she is in labor. The blood supply of the placenta is evidently interfered with in some manner at this time and the fetus dies. Six weeks later she is admitted to the hospital suffering from toxic absorption from the dead fetus. It is removed by section, no attempt being made to remove the appendages except those which are macerated and peel off easily without causing bleeding by wiping with a sponge. It required four months for the sloughing and absorption of the appendages left. After this she begins menstruating in another month and enjoys five months of good health when she again becomes pregnant in the other tube. This ruptures partially about the fourth month and she is again operated, which is only thirteen months and ten days following the first operation.

DISCUSSION

Dr. Benj. J. Lawrence, Raleigh, Chairman: This is an interesting report of a very unusual case—I mean unusual in the sense that it is certainly not common. Most of us have not seen the condition, or have seen it certainly only once or twice. I wish to thank Doctors Martin and Ashby for the paper, and hope we shall have a good discussion.

Dr. T. E. Wilkerson, Raleigh: I would like to say just a word in connection with the full term fetus in extra-uterine pregnancy. One woman carried around an abdominal tumor for six years, and on operation it was found to be a full term fetus floating around in the abdominal cavity. Another woman had carried a full term fetus for three years in the abdominal cavity. The scar area was somewhat like Dr. Ashby described, on the side of the pelvis. The feti were dead. I do not recall going into the history as to whether there were any symptoms of normal labor or not. It has been so long I can not tell, but I do not think any such symptoms were obtained.

Dr. Lawrence: Sometime ago I had the pleasure of assisting another surgeon with an operation similar to this. It was a lithopedion, I suppose it would be called, a full term fetus as hard as a stone. I do not know how long it had been in there, as I do not recall the history. It was the first time I had seen one, or heard of it since I was in medical school. These cases are very interesting, and it is well to have them in mind, because an abdominal tumor is not always easy to diagnose. Certainly ectopic pregnancy requires a good deal of consideration in the earlier stages. They tell us about the spongy mass in the culdesac, the jaundiced appearance of the eyes, and that the patient is anemic and dyspneic, but in my short experience, though I have seen them under different circumstances and under widely varying conditions, I certainly can not say whether it is ectopic pregnancy, pus tube, or what it is in many cases.

Dr. Ashby, closing the discussion: We learned something from this case. It required four months for that wound to heal, and the next one we expect to pack. It is impossible to remove the placental mass at the time, because of the bleeding it would cause, but in the next one we expect to pack the space—I don't mean firmly, but pretty well fill it up with gauze.

SOME RECENT THOUGHTS ON THE PATHOLOGY AND TREATMENT OF CANCER

H. H. Bass, M. D., Henderson

The history of cancer is as old as the animal and vegetable kingdoms. The ancients knew cancer well. It is mentioned in the Papyrus Ebers (1500 B. C.) and in the oldest literature of India and Persia. Hippocrates, Celcus, Galen and others wrote of this dreaded disease.

As to the etiology of cancer, much has been written, and every theory presented has been closely studied without positive proof that it is the cause of the disease.

Laboratory researches have rendered, however, a valuable service in connection with cancer, by the negative results obtained.

Thus, all are pretty well agreed that cancer is not due to a parasite, nor contagious. That it is not strongly hereditary; nor due wholly to local irritants; that it is not altogether a disease of old age; does not belong to any special occupation; does not affect any special sex or race or class of persons; that it exists all over the earth.

The present thought as to the probable cause of cancer, seems to be along the lines of metabolism, caused by errors in diet, faulty elimination, or some form of stasis producing toxic poison.

There have been recent ideas advanced that neoplasia is an end product of cell formation, instead of a primary one. As for example: Fibrosis is an end product of inflammation. So is neoplasia an end product of some toxic poison effecting the biological arrangement of cell formation. They are not different tumors but grow in different soil. In other words, the patient determines the grade. Their genesis are the same histologically, but the end results are different. Furthermore, we believe that tumors, as they appear clinically, are end results. What the doctor examines is not an entity (the tumor), but the results of previous pathological phases, and if fibrosis is the end results of changes that happened in other tissues as results of other types of infection, why not the same be true of cancer?

There has been much written on the pathology of cancer, and when one reads the books written by different pathologists of today, he wonders why these writers have left the surgeon so completely in the dark.

The pathologists have done well. All agreeing except in minor details as to structure and classification. But what the surgeon should know is the type of tumor we have to deal with. Whether it is benign, mildly malignant, or of a highly malignant character. Will it metastisize or not. These are the facts that the surgeon should know at the time that he operates.

Those who have treated cancer know the importance of thorough treatment, and this can be limited only by a thorough knowledge of the pathology. The prognosis, the treatment all depends upon the pathologist. The most comprehensive typing of cancer that I have seen, is by Dr. Broders, of the Mayo Clinic, and we quote the following:

He says. "As a rule, the more marked the differentiation in a squamous-cell epithelioma, the lower is the degree of malignancy.

The degree of cellular activity is graded 1 to 4 on the same basis, namely, if the epithelioma shows a marked tendency to differentiate, that is, if about three-fourths of its structure is differentiated epithelium and one-fourth undifferentiated, it is graded 1, slide 1; if the percentage of differentiated and undifferentiated epithelium are about equal, it is graded 2, slide 2; if the undifferentiated epithelium forms about three-fourths and the differentiated

about one-fourth of the growth, it is graded 3, slide 3; if there is no tendency for the cells to differentiate it is graded 4, slide 4. The number of mitotic figures and the number of cells with single large deeply staining nucleoli, one-eyed cells play an important part in the grading. There has been further advances as to this typing. That is, grade 1 is almost benign and has a very slight tendency to metastisize. Grades 2 and 3 are more malignant and will metastisize. Grade 4 is most malignant, but does not metastisize, owing perhaps to the extreme embryonic state of the cells and being prevented from entering the blood and lymphatic system by the natural protective medias of the body.

This typing holds good in other forms of cancer, which are classified according to the stage of their cell development. This typing should be done with frozen sections before the operation, when possible, and with those that have become experts can be done without staining. While this typing has not been universally accepted, it seems to me to be rational and one that will be of great help to the surgeon and the patient.

TREATMENT OF CANCER

There are certain facts that I will state at the beginning.

Cancer cannot be treated successfully by any one method alone for all types of cases. It is such a formidable foe that it is worthy of all the steel that we can bring to bear for its destruction. We would not think of treating cancer alone by any one method.

Our armamentarium consists of X-ray, radium, surgery and high-frequency electricity. In the treatment of this disease we could not spare any one of them without seriously damaging our defense. They all must be employed with knowledge, foresight and skill. It is a disease for the surgeon and not the medical man to treat. One must have a knowledge of proper surgical technique, must know anatomy and be thoroughly versed on after treatment. No case should be treated without a thorough physical examination and every effort should be made to correct other existing diseased conditions, while treating cancer with any one of these methods.

Surgery needs no discussion, as there has been volumes written on the surgery of cancer. It has its uses and we cannot do without it. Radium and X-ray can be classified under the same head, as they have the same histopathological reaction on tissue cells to a great extent, and differing only in penetration and intensity. There has been much written on these methods of treatment and I have nothing new to suggest. We well know the benefits derived and the results obtained. The dosage and method of application and results on tissue have been standardized.

The *High Frequency Electro-Thermic Methods* have not been in universal use. I think due, perhaps, to several reasons. First, the lack of knowledge concerning these methods. Second, the poor apparatus that has been on the market for this special line of work.

There should be a proper balance between voltage and amperage. The current passing through the tissue should not be too hot, nor too cold, but a fineness of balance whereby the results can be obtained. An apparatus could give perfect results in other diseased conditions and be worthless in the treatment of cancer.

Before beginning the discussion of treatment by these methods, I will attempt a brief description of the currents employed.

First. The name Electro-Thermy, Dia-Thermy and Endo-Thermy, meaning heat generated within and passing through the tissues. Being necessary to obtain this heat properly we use two different types of current for its production. First, the current produced by a monopolar high-frequency apparatus, of the Oudin type. The current is conducted to the lesion by means of a copper electrode with a steel needle, or other pointed metallic electrode, a single spark gap in the circuit is employed. The indifferent pole being the patient's body, table, floor and back to the generator. This current is of high voltage and relatively low amperage. The effect upon the tissue is that of a drying superficial heat, depending upon the depth of the needle inserted into the tissue. This heat does not cauterize, nor char the tissue, but simply dries and mummifies it. The return circuit is of such a large caliber (being the patient's whole body) that it soon dissipates. Hence, it does not penetrate very deeply. This method is known as *Desiccation,* and was first described by Dr. W. L. Clark, of Philadelphia. This is used in all types of benign or superficial malignant growths. Desiccating and curetting the tissue away until you can go any depth or area that you desire, always having the current under perfect control to the finest hair-like spark to as high voltage as you wish with its corresponding destruction.

This method in proper hands is incomparable, as to results obtained; it does not stimulate excessive fibrosis, consequently, the wounds heal with practically no scar formation.

Second. The Bipolar high-frequency current of the d'Arsenoval type, with a multiple spark gap and milliamperemeter. The indifferent pole is attached to a large asbestos pad which is moistened and placed under the patient's naked back. The direct pole is held by the operator with its pointed needle. This current is of low voltage with a high amperage. This current is more intense and penetrating than the Oudin current, going any depth that you desire, depending upon the intensity and volume of the current used. Its action upon the tissue is that of a cooking or steaming process, as the heat is produced by the resistance of the tissue to the current. If the current is sustained for a sufficient length of time, the tissue can be literally cooked or boiled. Take the asbestos pad under the patient's back as the base and the hand electrode as the apex of the triangle. The intensity of heat will be at the point of the needle in the operator's hand. Consequently, the greatest cell destruction will be at the point of the needle, with less destruction farther away as the current broadens, or dissipates towards the base. This

method of treatment is known as the coagulating method, and was first described by Doyen.

You can readily see the flexibility of this method of treatment from the simplest growth to ones requiring the most extensive dissections. It is applicable and useful in inoperable conditions when all other methods have failed. Sealing and coagulating blood vessels and lymphatics. There is practically little reactionary pain to this treatment. I have seen patients with the tongue removed by this method smiling without pain, and hungry, on the following morning after the operation. But you, also, can see the dangers ahead for the operators that are uninitiated. It requires both skill and knowledge to successfully use these methods, but in the hands of the initiated I know of no method where the lesions are accessible and require extensive dissections that can compare with this method of treatment.

The Histopathological Studies were made by Dr. Eugene J. Asnis, pathologist to the Wm. L. Clark Hospital, Philadelphia, Pa., and I quote Dr. Asnis as follows:

"In the vast majority of instances histologic studies of neoplasms are limited to diagnosis. Since the advent of radium and x-ray, not a little attention has been given to the miscroscopic changes in the tumor tissue submitted to the action of these agents, namely, the hydropic and fatty metamorphosis of the cytoplasm, the pyknotic nuclei, the round cell infiltration and the vascular and fibroblastic changes. As far as we know, no studies have been made of histologic changes in neoplasms following the use of the desiccation method, first described by one of us (Dr. W. L. Clark) and that of coagulation, originated by Doyen. During our usual routine of examining tumor tissues for diagnostic purposes, the peculiar appearances of the cells submitted to desiccation and coagulation were observed to be entirely unlike those treated with radium and X-ray. This led us to further investigation.

Clinically summarized, the aim of the electro-thermic methods is to destroy malignant cells, to seal blood vessels, and obtain a healing wound with the least amount of cicaterization.

In order to correlate the histologic findings with the clinical results obtained, miscroscopic examination of tissues exposed to desiccation and coagulation currents were undertaken. The material used consisted chiefly of epitheliomata (basal and squamous type), and the normal tissues of laboratory animals. The investigation entailed the study of the effect of the current on the cells and blood vessels in the immediate and remote areas of the fields of operation. The histologic pictures thus obtained were so well defined and uniform as to stamp them with definite characteristics. (Slide 5) The cells submitted to the desiccation current were shrunken and shrivelled, and their nuclei condensed and elongated, the whole assuming a mummified appearance (mummification necrosis). Some of the blood vessels were thrombosed, the walls remaining intact, and there were no evidences of external hemorrhage. In the case of coagulation (Slide 6), cell outline was entirely lost,

the affected tissue elements seeming to have fused into a structureless homogeneous mass presenting an appearance not unlike that of hyalinization. The majority of the blood vessels were thrombosed.

Since the neoplastic tissues examined were those obtained on the operating table, no opportunity was afforded to observe if any cell reaction had occurred in the zone of irritation adjacent to the area treated. For this purpose guinea pigs and rabbits were used. Small areas of skin, subcutaneous tissue, and muscle were submitted to desiccation or coagulation currents and the animals returned to their cages. Two days later sections of these areas were removed for study. They revealed practically the same tissue changes already noted. In addition, however, round cell infiltration was observed in the outlying zones and in certain of the microscopic fields the infiltration was localized around the blood vessels.

How may one interpret these histological findings in terms of clinical values? In other words, what are their practical applications?

It is the fundamental principles of pathology upon which these microscopic studies were based, and it is in this sense that tissues treated by electro-thermic methods present histologic pictures which are of such uniformity and constancy to endow them with specific histological characteristics, namely, the shrunken and elongated appearance of the cells and their nuclei; the round cell infiltration in the case of desiccation; the complete loss of cell outline and the hyalinized appearance and thrombosis of blood vessels in the case of coagulation.

The electrothermic methods are dependent for their results upon the resistance of the tissues to the current which manifests itself in the formation of heat.

In the case of desiccation, the current being of comparatively low amperage, only a moderate degree of heat is produced, of sufficient intensity, however, to cause complete evaporation of the water content of the cell, hence their mummified appearance. Since the mode of cell death is associated with very little degenerative change and scant disintegrated material, there is but a small amount of fibrous tissue as an end result, hence the good cosmetic results and, incidentally, the neighboring healthy tissues are spared the devitalization resulting from the formation of abundant contractile fibrous tissue. The coagulation method, requiring a higher amperage, induces a more intense heat, so that it not only dehydrates the tissues but causes coagulation of the cell protoplasm. This greater degree of destruction results, as we have learned to expect, in a proportionately greater amount of fibrous tissue formation.

TO SUMMARIZE

1st. A more thorough study as to the cause of cancer.

2nd. More rapid and thorough diagnostic methods on the part of the pathologist.

3rd. That the histopathological studies have proven, that not only are the aims attained, but the entire electro-thermic method is placed upon a histologic basis and correlated with clinical results.

4th. When we read the last mortality census of cancer in both North Carolina and the United States, we find there were 1,216 deaths in North Carolina from cancer in 1922, and 72,931 deaths in the United States from cancer in 1920; and that the disease has been on a 2% annual increase for the past ten (10) years. I am sure it is time for some of us to make greater efforts to find the cause and help eradicate this dreadful malady.

DISCUSSION

Dr. Ivan Procter, Raleigh: I think Dr. Bass is to be congratulated upon this thorough paper on the diagnosis and treatment of malignant disease. It is one of the most important subjects we ever meet with today, and a subject that has had as much advancement in the last few years as any other subject. This method of electrocoagulation, in the hands of Dr. William L. Clark, has proved to be one of the best forms of treatment for superficial cancer. It is a bloodless operation, has almost replaced the knife, and is much better than radium or X-ray.

Cancer of the cervix is one of the worst cancers we have, is one of the most malignant, and kills about as many people as any other cancer, if not more. It is also one of the most neglected forms of cancer, and is not being treated as early as it should be. It is a cancer that has to be treated in a prophylactic way to get the best results. As Kelly says, if you wait until you can say it is cancer of the cervix, you have waited too long. If you wait until there is a definite lesion there, radium, X-ray and surgery all will fail. Cancer of the cervix is something that has to be treated radically in an early stage, and the sooner we wake up to that fact the sooner we shall begin saving these cases. I have a patient under my care now who said she had a normal menopause, then went fifteen months and began bleeding. She went to her physician, who examined her and said she was all right. After eight or ten weeks she had another hemorrhage and went back to her physician, who again said that she was all right. That was repeated four or five times

Radium will relieve some of the pain and remove the foul discharge, but it can not cure. It is a palliative measure at that time. Cancer of the cervix, then, is to my mind one of the most important diseases we have to treat. Radium and surgery should be used by the same man. The best results are obtained when the surgeon uses radium himself and knows the action of radium. If a cancer of the cervix is radiated by a radiologist and is possibly a surgical condition, it puts the surgeon at a disadvantage to operate on that case, because there is a good deal of fibrous tissue and there is a good deal of toxemia. Again, if the surgeon operates first, then the

case should be irradiated and it is hard to give the proper dosage after the protecting cervix has been removed.

Dr. J. M. Templeton, Cary: This is a subject of vast importance, as Dr. Bass said. I quite agree with him. I expected the surgeons to monopolize the time, but as we have a general practitioner to open the discussion I would say a word.

I remember some years ago there was an old colored man out here in Wake County who had lost a finger. I asked him how it happened. He said he had a bone felon on the forefinger of the other hand, and had Dr. Hill come out and lance it. When the missing finger was attacked he concluded he would be his own surgeon, so he laid it on a block of wood and cut it off. I always think of that when I think of our treatment of cancer and infected tonsils and other things of that character. I believe, as Dr. Bass says, that they are surgical cases, but I believe the time is coming when they will be medical cases, that the time will come when we shall not have to resort to some man skilled in the use of the knife to cure a pathological condition. Some time ago I read about a man in Algeria, I think it was, who had discovered a glandular cure for cancer. Well, I do not take much stock in anything that originates in Algeria, but the possibilities of glandular therapy are undreamed of today, and perhaps the time will come when we shall not need you surgeons, but shall have sense enough to cure cancer and all other pathological lesions by medicine.

Dr. Charles Phillips, Wake Forest: I rather welcome the co-operation between surgeons and pathologists as suggested in Dr. Bass's paper. Probably all surgeons need more training in surgical pathology, and I would welcome the requirement that all beginning surgeons spend at least six months in training in pathology in some good clinic. So I am glad to see Dr. Bass's approach to this subject, because I think it will probably give results.

I can not see that Algerian polyglandular therapy will cure cancer, because this is a cellular proposition. Nature fights cancer by causing changes in the malignant cells themselves. We have very good reason to believe that the radiation influences do the same things to tissues in the proportion of their exposure that nature wants to do itself. Hence we may secure success by simulating, or, rather, stimulating nature's program. Dr. Murphy, of the Rockefeller Institute, has demonstrated this by experiments on white mice. Here is something where we probably shall have success. Then the acceleration or accentuation of nature's attack is probably to be brought about by such an approach as this. Too little work has been done on electrocoagulation. It is a field that is quite new, you know. X-rays and radium have been known for a long time and their effects are much more definitely recorded, yet we do not know enough. I think the time will come when sur-

geons will very heartily co-operate and submit their material to critical study by themselves or by their associates, so that together we can tackle the problem. Even this does not, of course, exclude us from research, which some are trying to carry out, on the etiology of cancer. At the same time we can go at cancer by X-ray and radium and certainly meet with very appreciable success.

Dr. C. O. Abernethy, Raleigh: The desiccation treatment of these superficial cancers, particularly the rodent ulcer type and sinile keratosis, has been extensively used and has met with good results. As Dr. Bass brought out, it does not leave any scar. You can remove these growths from old people's faces and in two or three weeks cannot find where they came from. Of course, the tissue has been destroyed, but the scar tissue is practically nothing. I have been using this since 1915, and have had very gratifying results in removing roden ulcers with very little scar formation following.

Dr. Cyrus Thompson, Jacksonville: Before Dr. Bass read his paper he said to me, "I want you to discuss my paper on cancer," and I replied, "I can't, sir." Still, I want to add just a word to the discussion, not that I know anything about it, but perhaps because I do not know anything about it. Not infrequently a man can talk better about a thing he does not know anything about than about something he does know something about. I remember long years ago, sir, when I was a young man and dabbled a little in politics, there was a phrase that we applied to bad political conditions. We said, sir, that such and such a thing was a cancer on the body politic; and, of course, the thing to do was to get rid of the cancer; for if we did not it would destroy the body politic. Now we know that if a man has a cancer and it is not got rid of early it will destroy him.

Dr. Phillips just remarked that he did not see wherein Dr. Templeton's suggestion of glandular therapy would enter into the matter at all, for the reason that cancer is a cellular problem. The truth of it, as I see it, Mr. Chairman, is that because cancer is a cellular problem polyglandular therapy might be of service in the treatment of it. Mr. Chairman, we have a very mistaken and very erroneous conception of ourselves. I stand here and you say, "He is an individual." I stand here, sir, and say I am an individual and that you are individuals, but that maniac in the Scriptures, crazy as he was, had perhaps, when asked his name, a more perfect conception of the individual than the ordinarily sane man. He cried out, "My name is legion, for we are many!" In other words, we are not one, but collections of countless cells, each a separate functioning organism in this somatic aggregation which we call the individual, and whatever affects the cells of which we are constituted must also affect us and every part of us.

I was reading in the Literary Digest the other day that some fellow had got down to the ultimate atoms and described their com-

plete individual activities. All our individual life is ultimately cellular. What I am saying is this—every one of us is not an individual, but an aggregation, a federation compacted of multitudes upon multitudes of cells, every cell in itself a distinct and perfect organism, functioning just as finely as we ourselves are functioning. Some one has said, Dr. Bass, that cancer is cellular mutiny, and if you cut off the mutinous group, those who believe in cutting, or destroy it, those who have these imponderable agencies to treat it with, the mutiny will not run through, infect and destroy the whole body. If you do not get rid of this first mutiny, it will run through, disorganize and destroy the army.

Now, Dr. Bass says it is a matter of metabolism. Bulkley says it is a dietary problem. Constantly you are determining the rate of metabolism, in your patients; sometimes it is too high, sometimes too low. You say it is a matter of thyroid, or glandular, excess or deficiency. The cells do their work better under normal glandular action. Tennyson said of the little flower that he held in his hand from the crannied wall, if he could just know it, root and branch, and all in all, he "would know what God and man is." So if the medical profession could come to know all the cellular influence of the glands of internal secretion, we would know almost everything, cancer and all.

When does cancer come on? Not in young life. Not in the time of normal metabolism and glandular balance. I could take the audience here and pick out every man sixty years old or more, just by seeing whether he had these kerotoses, these hardened spots, on the back of his hands. The slave-dealer told the negro's age by pinching up the dorsal skin of the hand and noting the resiliency or lack of it. If you could give him new gonads his hands would be as smooth as a child's by Easter morn: but you can not do it, alas.

When you get down to the bottom of the cancer problem you find it is cellular, and the cells function under the influence of the ductless glands, and my delightful friend Dr. Templeton here, of Cary, Dr. Phillips, when he talks about glands may be right, and you may learn something along that line by the time you get as old as he is. He is sane, to say the least of him.

I did not intend to discuss this subject further than to say we are a body politic, and when we get rid of the mutinous cells, the cancer, we shall save the body. The thing for us to do, as physicians, is to teach the people, teach the people, teach the people, that cancer is to be diagnosed and treated early, by whatever method. It is better to enter into the Kingdom with one eye than to go to hell with two.

Dr. Templeton: I would just like to say that it is not my theory that plural glandular therapy would cure cancer. I said that the theory originated in Algeria, and that because of its origin I was inclined to doubt it. I also said that we are just on the edge of glandular therapy; we do not know much about it. I do want us to learn

more about it and so put you fellows that wield a knife so deftly out of business. I think we shall see the fundamental theories in medicine utterly reversed. While Dr. Phillips gets up here and dogmatically says that, because cancer is a cellular condition, it is not amenable to glandular therapy, I think he may live long enough to see his mistake.

Dr. Benj. J. Lawrence, Raleigh, Chairman: I believe I may say for the pathologists that, even though they do look through a small hole most of the time, they want all the light they can get.

Dr. Bass, closing the discussion: Dr. Phillips, nobody appreciates more or realizes better the important role which the pathologist plays in the diagnosis and treatment of cancer than I do. As I stated in the paper, it depends upon him when we get back to Broddus's typing. He went so far as the prognosis in various types of tissues. Type 1, of course, is benign or slightly malignant. In types 2 and 3, according to the degree of development the cells have reached; and you might say these are the most dangerous types of cancer. A patient living one to two years, of course depending upon the location and the accessibility of the growth to treatment. The pathologist can tell the surgeon, "This man will live one year," or two years or five years. It is a great help, you all know that.

As to Dr. Templeton's and Dr. Thompson's discussion, none of us know the possibilities of the future. Of course, these thoughts I have advanced along the lines of metabolism, on the question of intestinal stasis, the question of toxic poisonings have not been proven yet. It puts us all to thinking, looking and watching. None of us know what tomorrow offers. We are all students and coworkers, I hope and shall work together on the problem.

As to surgery I purposely left that off. When I started to write a paper, the more I said, the more I could say. I have been a surgeon for twelve years, doing nothing but surgery. We have been radiating those cancers before operation. I think all types should be radiated or treated by X-ray several weeks before operation. If you remember the pathology of cancer, there are only two general types, carcinoma and sarcoma. One is an epithelial tissue formation and the other a connective tissue formation. If the surgeon could have a microscopic eye, and see into the lymphatics and capillaries, and see that he was not pressing the malignant cells into them, then he would know he was eradicating the disease. The next best thing we have to offer is blocking off these lymphatics and capillaries by radiation. I believe if you will do that you will get better results. It has certainly helped us.

HORSESHOE KIDNEY—REPORT OF A CASE

H. M. Vann, M. D., Professor of Anatomy; Charles Phillips, M. D., Professor of Pathology, Wake Forest College

In early fetal life the kidney occupies the pelvis and subsequently migrates to its permanent position, but in defective migration may occupy any position from the pelvis to the renal fossae. The horseshoe kidney is a condition in which the lower poles of the kidneys have become fused, with a strip of kidney tissue extending across the median line. As Morris observes "fusion of the two kidneys is always accompanied by displacement, the mass usually being situated at a lower level and nearer the median line." Authorities agree that the connecting strip of kidney tissue between their lower poles is due to a union of their metanephric substances and occurs about the seventh or eighth week of uterine life. [1]Occasionally however fusion takes place later than the eighth week but this later fusion shows only the capsules to be fused and [2]Bryan says that this later fusion may result in a fusion of the upper poles.

The case of horseshoe kidney we are presenting is only of interest from an anatomical standpoint and as a matter of record, because no life history of the subject was had, the specimen being found during the routine dissection by members of the First Year Medical Class at Wake Forest College. The cadaver in whom it was found was a well developed male, muscular and healthy looking, a case of electrocution at the state penitentiary. So far as we know and have been able to observe from careful dissection in this case the individual did not suffer any ill effects because of the presence of this rare abnormality, which Sir Henry Morris claims occurs in about one of every thousand bodies.

In the Journal of the A. M. A. for December 22, 1923, [1]Dr. K. Kinard, of Kansas City, Mo., reported a very interesting case of horseshoe kidney, which was operated on, a nephrotresis being done. He makes some observations in his account which are worth comparing with certain anatomical features existing in our case. First, he says that the horseshoe kidney is usually situated at a lower level than the normal kidney. According to Grey the lower extremities of the kidneys are on a level with the third lumbar vertebra, and this is true in this case, the right and left masses being lodged in very nearly the normal position, the lower pole of the left being slightly lower than the right. Second, that its arteries usually arise farther caudad than is seen in the normal kidney. Measuring from a point where the superior mesenteric artery comes off we find that the two main renal arteries come off from the abdominal aorta opposite each other and only about .5 cm below. However, there is an accessory renal artery coming off from the front of the abdominal aorta about .75 cm below the point where the main renal arteries come off, this artery passing downward and to the right supplying the lower pole of the right kidney and per-

haps most of the connecting strip, the length of this artery being about 6.5 cm. There is a similar artery, a branch of the left renal artery, passing downward to the lower pole of the left kidney and perhaps supplying the left portion of the connecting strip. Therefore it does not seem that the renal arteries come off farther caudad than normal in this case.

Third, absence of the ventral lip to the hilum. In this case the pelves are separate and distinct, the right kidney possessing a ventral lip which overhangs the pelvis on this side, while the left kidney does not possess a ventral lip. There is present, however, a very prominent posterior lip which projects medially for about 1 cm beyond the posterior and medial boundary of the pelvis, thus as it were causing the left pelvis to appear as an excavation from the ventral surface of the left kidney. The pelvis on this side shows nicely the fetal position before ascent and inward rotation, while the opposite side shows the normal adult position.

Fourth, the ureter passes in front of the dystopic kidney. This is true both right and left. The ureters appear to be about the same length. The left ureter presses slightly to the left of the lower pole of the left kidney, this point being 6.5 cm from the midline. The right crosses the point of junction of the lower pole of the right kidney with the connecting strip, 2.5 cm from the midline, the two ureters being therefore 9 cm apart where they cross the horseshoe kidney.

The thickness of the right kidney is 6 cm, the left 4 cm, the normal being about 3 cm for each. The length of the left kidney is 13 cm, the right 10.5 cm, the normal being 11:12 cm. The breadth of the right kidney is 4.5 cm, the left 6 cm, the normal being 5:7 cm. The connecting strip measures 4.5 cm vertically and 1.5 cm in thickness, with the lower edge 2.5 cm above the bifurcation of the abdominal aorta.

In this case the inferior mesenteric artery does not arise at its normal level from the abdominal aorta. It comes off at a point 7.5 cm above the bifurcation of the abdominal aorta, whereas Grey says that it normally arises 3 or 4 cm above the bifurcation. In this case the point of origin is just above the connecting strip and the artery proceeds downward and to the left in front of the horseshoe kidney, there being a distinct impression in the kidney substance made by the artery.

There is another point of some interest. The right and left internal spermatic arteries and their accompanying veins cross the horseshoe kidney ventrally, the right internal spermatic vein emptying into the right renal vein just as the left does, instead of emptying into the inferior vena cava as normally. The adrenal glands appear to be normal.

There was no pathological work to be done on this kidney for it is presented as a very interesting and perfect anatomical specimen. In order to be sure that there was no central partition between the two kidneys located in the connecting strip, a wedge of

tissue was removed on the under side and found to be true kidney substance.

SUMMARY

The following salient points have been presented:

1. An unusually fine and perfect specimen of horseshoe kidney was discovered in the dissecting hall by first year medical students.

Fig. 1—Horseshoe Kidney. General Anatomy.

2. No clinical or pathological connections with former life are known, but apparently its owner being found normal at death suffered no inconvenience from its presence.

3. The anatomical location of the horseshoe kidney is the same as the normal except of course that of the connecting strip.

4. Somewhat detailed description of the gross specimen with its blood supply is presented.

5. This specimen shows beautifully in one kidney the fetal position of the pelvis of the kidney before inward rotation toward the vertebral column, while the opposite kidney has the adult position entirely.

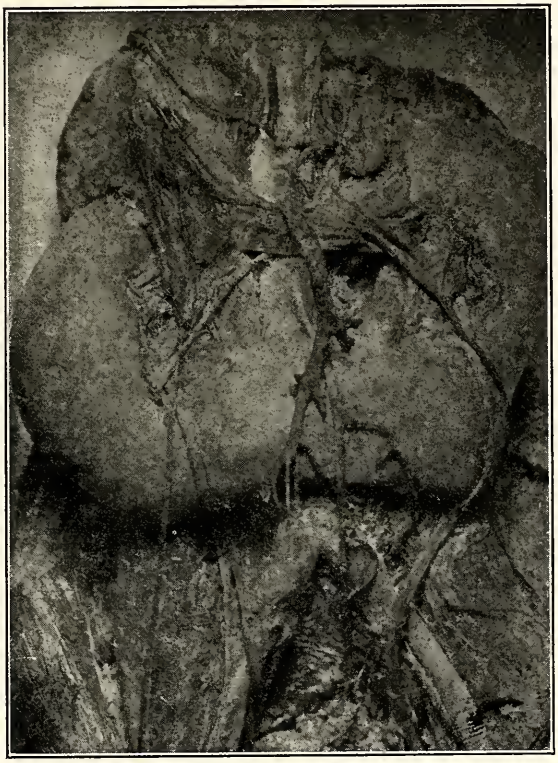


Fig. 2—Horseshoe Kidney. Vessels and Ureters

BIBLIOGRAPHY

[1]Kinard, K. Jour. A. M. A., Vol. 81, 2077, Dec. 22, 1923.
[2]Bryan, R. C. Virginia Med. Monthly, Vol. 48, p. 75. May, 1921.

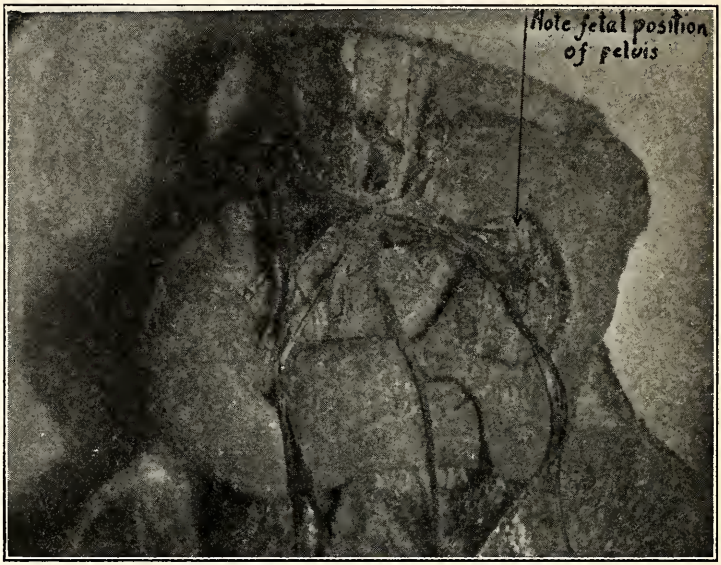


Fig. 3—Horseshoe Kidney. Position of pelves

SYMPOSIUM

ON CONGENITAL PYLORIC STENOSIS AND GASTRIC AND DUODENAL ULCER

(Combined Sections on Surgery, Practice of Medicine, and Chemistry, Materia Medica and Therapeutics)

Dr. W. T. Rainley, Fayetteville, Presiding

THE SYMPTOMS AND DIAGNOSIS OF CONGENITAL PYLORIC STENOSIS

Leroy J. Butler, M. D., Winston-Salem

Congenital pyloric stenosis is not an uncommon condition, an accurate description can be found in the literature as early as 1841, but it is only in recent years that the importance of an early diagnosis and a clear understanding of the treatment has attracted much interest. Up to 1910 only 598 cases of stenosis had been recorded, but since that time the disease has become the subject of much interest and many contributions have been given to medical literature showing that it is of more frequent occurrence than ordinarily supposed.

Congenital pyloric stenosis is usually seen in the first two months of life, occurring more frequently in males, and most of our recorded cases have been in nursing infants, although this may be explained due to the fact that most of our babies are breast fed beyond the time that the symptoms appear.

The clinical picture is rather striking, an infant apparently well at birth, nurses well, and gaining in weight begins to vomit without apparent cause, at first occasionally, soon it increases in frequency and severity. The infant gradually loses weight, there is no elevation of temperature, and little or no evidence of pain, the bowels are constipated, there is a progressive failure in nutrition and death may occur from exhaustion in from one to two months from beginning of symptoms if untreated.

The characteristic symptoms are vomiting, constipation, and loss of weight. Vomiting is one of the first symptoms noted, it usually occurs between the second and fourth week although in some cases it may be seen as early as the third or fourth day of life. In my own experience I haven't observed this condition earlier than the tenth day. The vomiting has certain features which is suggestive of the disease, it occurs in previously healthy and carefully fed babies, it is projectile in character, there is a persistency notwithstanding the alteration of feeding.

The vomiting usually occurs soon after the taking of food, but sometimes several feedings may be retained and later expelled, the quantity vomited being far in excess of the amount of food taken at one feeding. The vomiting does not appear to be accompanied by

pain, but usually there is some evidence of discomfort in the interval between the feeding and the expulsion. The vomitus at first contains more or less digested food, later it contains mucous.

Constipation occurs fairly early in this condition, whether marked or not, depending upon the severity of the stenosis. In the very severe cases the stools resemble meconium in appearance and contain no normal fecal material, with partial occlusion the stools contain fecal material, are apparently normal in appearance, although very small in size.

The gradual loss in weight is another important symptom, if the obstruction is marked. There is a constant and rapid loss, from one to three ounces daily, if the obstruction is not so marked, there may be days in which the weight curve remains stationary or shows a very slight decline.

On physical examination two important points are visible gastric peristalsis and a palpable thickening of the pylorus. The gastric waves are best seen immediately after the child has nursed, they are seen as slowly moving waves, varying in size appearing first at the left costal arch, and moving towards the right disappearing in the right hypochondrium in the mammillary line.

The thickened pylorus varies in size from ½ to ¾ inches in length and from ¼ to ½ inches in width, it is described as a round, hard, easily circumscribed and somewhat moveable mass, it is fairly easily felt by one who has had experience in palpating them, by others not so readily. It is very essential that the abdominal muscles be relaxed, this may be accomplished by allowing the baby to nurse a bottle of water or milk during examination, at times a few whiffs of an anesthetic may be necessary to secure satisfactory relaxation.

Another characteristic feature of congenital pyloric stenosis is gastric retention or delayed emptying time of the stomach, in normal healthy infants the stomach is usually found empty three hours after feeding, but if stenosis is present, food varying in amount is usually always found. Gastric retention is estimated by two methods, by X-ray of the stomach after taking bismuth meal and by the removal of the gastric contents by suction at various periods after feeding, the latter method probably being the best, as large doses of bismuth for diagnostic purposes is objectionable, and may be dangerous in very young babies.

In the diagnosis of congenital pyloric stenosis one of our frequent mistakes has been in confusing it with gastric indigestion, this condition is very common in infancy, but it is not very common in nursing babies, the vomiting occurs more frequently and in smaller amount, there is very little retention of food after the normal emptying of the stomach, and vomiting usually stops when the diet is regulated.

It may be confused with congenital obstruction of the duodenum but this condition usually occurs soon after birth and the vomited matter contains bilious material.

The diagnosis of this condition is usually easy after a few days of observation. The character and onset of vomiting, constipation,

gastric peristalsis, tumor and gastric retention are the main diagnostic symptoms. Bearing these few points in mind I feel that our diagnosis of this condition will be relatively easy and that in the future our mortality will be greatly reduced due to our early diagnosis.

THE MEDICAL AND DIETETIC TREATMENT OF CONGENITAL HYPERTROPHIC PYLORIC STENOSIS

J. Buren Sidbury, M. D., Wilmington

The treatment of Congenital Hypertrophic Pyloric Stenosis is divided into two main heads, Medical and Surgical. Both lines of treatment yield very satisfactory results in competent hands. It seems to be the consensus of opinion of both medical and surgical men that unless the case is seen too long after the onset of symptoms, that is, if the baby has not lost too much weight already, he should be given the benefit of medical treatment first. In 1914, Sauer (4) treated successfully an infant five weeks old with thick farina feeding who at the beginning of the treatment weighed 840 gms less than he did at birth. This treatment was tried because operation was refused. Since then many cases have been successfully treated medically.

The majority of pyloric stenosis cases occur in the breast fed. Those of us who are always advocating the slogan "keep the baby to the breast," feel that all of these cases should be breast fed. No baby should be on the bottle at 4 to 6 weeks if it is humanly possible to keep him off of it. Breast milk is very important in the treatment of these cases and every means should be used to give them breast milk if it has to be expressed and added to the other food that is given. In the post-operative cases breast milk is all but imperative.

When a diagnosis of Pyloric Stenosis is made Atropine Sulphate gr 1/1000 is advised 20 to 30 minutes before each nursing every four hours. This dose is increased 1/2000 of a grain at each succeeding dose until there is flushing of the face. In some cases the administration of atropine by mouth in this way will be all that is necessary to control the vomiting and cause the desired gain in weight. This may have to be kept up for two or three weeks or even longer. Grulee advises the administration of atropine by hypo before each feeding. He reports very satisfactory results by this method only.

When this does not stop the vomiting the next step that may be taken with the breast fed baby is to give one or two tablespoonfuls of barley jelly or farina jelly just before nursing the baby and have the baby nurse only five or six minutes. Feeding intervals are to be four hours apart and in some cases five hours are found to be better.

Lavage. These cases should be lavaged two or three times each week for two or three weeks. Some physicians advocate lavage two or three times each day, but that would be impractical except in hospital cases. Hess A. advocates duodenal catheterization.

In regard to atropine there is one point I want to stress before leaving the drug treatment of this condition. When atropine is given it should be a fresh drug and should be made up fresh every one or two days. Very often we find that a very much larger dose from the "old bottle" will not produce as much flushing as a much smaller dose from the "fresh bottle" of atropine. Remember these points in the administration of atropine in this condition: 1. A fresh drug is necessary. 2. It must be made up fresh every 24 or 48 hours. 3. The physiological dose is necessary to get therapeutic results. 4. These infants tolerate atropine very well indeed.

A practical method I have adopted is to give the patient a prescription for 20 tablets of atropine sulphate gr. 1/150 each, and direct them to dissolve one tablet in 7 teaspoonfuls of sterile water and give one teaspoonful one-half hour before each feeding. If one teaspoonful does not cause flushing, give one and one-half teaspoonfuls the second dose, and two teaspoonfuls the third, thus increasing the dose each time till the physiological dose is reached or until the vomiting is controlled.

Dr. H. Leslie Moore (7) of Dallas, Texas, reports cases in which he gave very large doses of atropine before the vomiting was controlled and no untoward symptoms were noted. It might be asked in his cases if he might not have been using an old drug in his series.

Papaverin hydrochloride has been suggested in the treatment of this condition (4). It may be given by mouth or by hypo. If it is given by hypo., gr. 1/3 to 1/6 daily or on alternate days. If it is given by mouth, gr. 1/6 T. I. D. A. C. I have had no experience with it.

Dehydration. So often these babies come to us in a terribly dehydrated condition and it is imperative that they get fluids. Saline by subcutaneous or intra-peritoneal route should be given. It is often necessary to repeat this injection of saline 100 to 300 c.c. each day for a few days.

Marriott advocates the administration of 50 to 100 c.c. of 20% glucose with 7.5 to 15 units of insulin intra-venously. This gives them a wonderful boost.

DIETETIC TREATMENT

So much for the drug treatment of pyloric stenosis. When the above methods have been given a fair trial, and this may be tried for as much as two weeks if the baby is not losing in weight, then thick cereal feedings should be given. Thick cereal feedings were first advocated for this condition by Birk in 1914 (5). His charts showed that infants fed on corn meal mush in place of breast milk gained rapidly and vomited less frequently when this was substituted for breast milk. In 1918 Sauer reported striking results in 11 out of 12 cases of pyloric stenosis treated in this manner. His initial formula is:

Skimmed milk	9 ounces
Water	12 ounces
Farina	6 tablespoonfuls
Dextri-Maltose	1 tablespoonful

Boil one hour in a covered double boiler. It must be thoroughly cooled and sufficiently thick to adhere to an inverted spoon. Two or three ounces are given every 4 hours. This is spooned in the baby's mouth. In 1921 he had treated 28 cases in this way with a mortality of 3.5%.

Porter (1) in 1919 reported 10 successive recoveries with a 10% rice flour paste fed into the base of "Hygeia" nipple which was slit at the end with a sharp knife. His initial formula is:

Skimmed Milk	5 ounces
Water	15 ounces
Rice Flour	4 tablespoonfuls
Dextri-Maltose	1 tablespoonful

The formula is prepared by mixing the water and milk, bringing it to boil and adding the cereal which is made into cream with a little cold water. This is boiled over the flame for 10 or 15 minutes and stirred constantly. The sugar is then added and the mixture boiled in a double boiler for 1 hour. Have 16 ozs. when finished and give 2½ ozs. q 4 hours.

Marriott advocates the use of whole lactic milk and Karo Syrup with 10-20% Barley flour. This is given through a nipple with a large opening, with a spoon, or forced through a large gavage tube every four hours.

Finkelstein says: "In the feeding of these cases the composition is of less moment than the consistency. Thick foods are far better than any other." He uses successfully a paste of powdered protein milk and 15-20% soluble carbohydrate.

Statistics (4):—Drochler says: "The true test of the internal treatment should include only the statistics of the clinician who had no cases operated on." With this in mind Sauer collected 497 cases of hypertrophic pyloric stenosis, seen by 14 competent clinicians, including severe as well as mild cases. Of this number the mortality was 8.9%.

Medically treated: 497 cases, 44 deaths, 8.9% mortality. Surgically treated: 761 cases, 91 deaths, 12% mortality. (Rammstedt.) Operators (Drochter, Downes, Strauss, Borchardt).

Holt (3) says that the treatment adopted will depend upon the type of case, but that in all cases medical treatment should be given a faithful trial for a period of one or two weeks, and that the mild cases will show decided improvement in a few days. But if the case is a severe one and the child's condition is bad, operation should be done in cases which show no improvement under medical treatment in a few days.

The baby should be weighed every day if in a hospital and at least every other day if in a private home. If the baby shows a gain of two or three ounces the first week he should be allowed to keep up the medical treatment another week and so long as he will gain three to six ounces each week medical treatment may be continued.

Marriott says if the patient can be kept from losing weight for four months operation will not be necessary. But if the vomiting persists and the weight curve is downward under this treatment for a week or two surgery should be advised and advised before the baby loses too much in weight and strength. It has been found that the surgical mortality in good hands is in direct proportion to loss in body weight. If the baby has lost 20% of birth weight the outlook is bad.

Porter (1) says: "With a clear conscience the medical man may advise either the Fredet operation or dietic treatment with a thick feeding. Or, better still, he may use the thick cereal feeding with the assurance that a large percent of cases will respond with complete restoration of digestive and nutritional function and for the stubborn cases there is still left the brilliantly successful operative method of Fredet which, used early enough, ought to obtain 100% cures.

E. Morgan (2).

Post operative feedings are viz:

1st day—one hour after operation	16 cc. sterile water	
two hours after operation	Breast milk 16 cc. Sterile water 4 cc.	q 3h x 8
2nd day	Breast milk 20 cc. Sterile water 4 cc.	q 3h x 8
3rd day	Breast milk 24 cc.	q 3h x 8
4th day	Breast milk 30 cc.	q 3h x 8

Breast milk increased 10 cc. every day till 75 cc. given q 3h x 8.

Baby is put to breast 7 days after operation and weighed before and after nursing to prevent getting too much.

BIBLIOGRAPHY

(1) Porter, L. Arch. Ped., July, 1919.
(2) Morgan, E. Am. J. Dis. Ch. 1916 XI 245.
(3) Holt, L. E. The Dis. of Inf. and Childhood, P. 316-323. Appleton, 1922.
(4) Sauer, L. W. Arch. Ped., Mar., 1924.
(5) Sauer, L. W., Arch. Ped., 1918, XXXV, 385.
(6) Sauer, L. W. Am. J. d. Ch., 1921, XXII, 166.
(7) Moore, H. Leslie. South. Med. Jr., 1922.

OPERATIVE TREATMENT OF CONGENITAL PYLORIC-STENOSIS

R. L. Pittman, M. D., Pittman Hospital, Fayetteville

Congenital Pyloric-Stenosis has long been recognized, but for many reasons it was regarded more as a pathological curiosity than a clinical entity. To Wm. A. Downes of New York is due the credit of focusing the attention of the profession on this disease and the

great good and lasting benefits that are soon to be seen are directly attributable to the influence of his work and writings.

As to the cause of this condition, we know nothing.

A thorough knowledge of its pathology is imperative when these cases are subjected to surgical means for relief. The disease is characterized by the over development of the tissues at the pylorus. The circular musculature is chiefly affected but the longitudinal layer may be also hypertrophied. The mucous membrane appears to enter into the process but this is more apparent than real, for a careful examination of it shows it to be normal, but folded and compressed into a very small space. A noticeable feature of the disease is an edema which occurs in the hypertrophied pylorus and about it. At the pylorus is a fusiform swelling an inch or more in length and from one-half to an inch in diameter. The tumor, if we can regard it as such, may be stony hard or it may have the consistency of cartilage The thickest part of the pyloric wall is usually near the duodenal junction. According to Cunningham, the extremity of the pyloric canal protrudes into the commencement of the duodenum presenting a striking resemblance to the portio vaginalis of the cervix uteri. The tumor is free from adhesions and is freely movable. It presents a smooth glistening peritoneal coat. The tumor itself is a little paler than the surrounding tissues; this is probably due to an edema and to a limited amount of blood in the contracted and hypertrophied zone. The intestines are collapsed while the stomach is usually distended. The thickness of the stomach depends largely on the stage of the disease. Early in the disease the stomach wall undergoes a physiological hypertrophy, and the stomach may or may not be distended, but as the disease progresses the muscles of the stomach become atonic and a dilation results. According to Palmer, the stomach in the last stages of the disease is nothing more than a big thin walled flaccid bag that has lost all power of muscular contraction.

TYPES OF OPERATIONS

An impression gained from a limited clinical experience and from a survey of the literature on this subject, leads the author to believe that this is practically always a surgical condition. At any rate this is true in cases that are at all severe, therefore, given an infant with Pyloric-Stenosis of a surgical degree, or one which has failed to respond to a short but thorough medical treatment, what treatment should be employed? In the past the results of surgery were so uncertain that Pediatricians were rather loath, and quite properly so, to recommend it. At present the results are so uniformly successful that no one should hesitate in recommending operation for the relief of this condition. This change has been brought about by the simplification of the operation and attention to the details of its performance with thorough pre-operative preparation and post-operative care under the supervision of a competent Pediatrician. Posterior Gastro-enterostomy which has successfully relieved some patients in the past was found to be too formidable an operation and has been practically entirely discarded. The operation of Pyloroplasty as now

done, has been evolved as the result of work done by Fredet, Webber, Ramsted, Keefe and others and as such does not warrant the attachment of any one man's name to it. The writer performs this operation in practically the same way as so clearly described by Downes. This operation has been justly given the name of the Fredet-Ramsted operation.

PRE-OPERATIVE TREATMENT

Before any operation is performed on these little ones it is very important that a careful study of their weakened, debilitated condition is made and thorough preparation for the operation should be carried out. It is very important that the coagulation time of the blood be determined and if necessary, two or three transfusions of 10 cc. of blood should be given the patient within 24 hours preceding the operation at intervals of every 8 hours. The extreme acidosis which usually exists should be controlled by the administration of glucose and saline solution given by the rectum or by hypodermoclysis. I prefer the latter method giving 20 cc. under each arm every 6 hours for 3 or 4 consecutive times preceding the operation. Immediately preceding the operation, the child's stomach should be emptied by means of a catheter inserted into the stomach. This brings us to the point of the selection of the anæsthetic. Many operators of long experience, such as Strauss, Downes, Ladd, etc., still adhere to the use of a general anæsthetic, while Bevan and many other surgeons of equal experience with this disease express their strong preference to a local anæsthetic. As for myself, I much prefer the latter, due to the fact that the child does not suffer from the shock associated with a general anæsthetic, vomiting is less, reaction more rapid and the child is allowed to take nourishment sooner.

OPERATIVE TECHNIC

Having decided to perform the operation under local anæsthesia and according to the Fredet-Ramsted technic the skin over the upper part of the right rectus muscle is infiltrated for a distance of about two inches. Then the superficial fascia and the anterior sheath of the rectus itself are infiltrated. The usual solution, ½ of 1% apothesine with 1-100,000 adrenalin is employed. Then an incision two inches in length is made, beginning a little below the costal arch, and the skin, the superficial fascia and anterior sheath of the rectus are divided; the rectus muscle itself is split. The split rectus muscle is now held apart by two retractors and the posterior sheath of the rectus and peritoneum are infiltrated with 30 or 40 drops of the solution. These are now divided exposing to view first the round ligament, which is pulled by the surgeon to the right side, and then the margin of the liver. To the left of this the greater curvature of the stomach is picked up with a pair of dissecting forceps without any teeth, so as to avoid injuring it. The pylorus is then gently pulled into view and the tumor at the pylorus can readily be seen. It is grasped between the thumb and finger of the left hand, and, after an avascular area is selected, the peritoneum is divided together with part of the

hypertrophied muscle fibers with a knife in longitudinal direction parallel with Lumen of Duodenum. A small pair of artery forceps are then introduced closed into the incision and gently opened to spread the incision farther apart. As the hypertrophied circular muscle-fibers are separated, a white fold comes into view, viz: the submucosa. The separation is extended until the duodenum is reached. Especial care is necessary at this part of the separation to avoid injuring the mucous membrane of the duodenum. Some operators prefer separating the tumor with the thumbs instead of artery forceps after first incising the peritoneum, the reason for this being that injury to the mucous membrane is not likely to occur. This is a matter of choice with the operator. If, however, an opening is made into the mucous membrane it is easily closed with a suture of small catgut without any ill effects. There is practically no bleeding, the pylorus is then dropped back into the abdominal cavity and the external incision carefully closed. The peritoneum and posterior sheath of the rectus are closed with a moderately fine catgut suture. Three silkworm gut sutures through and through the rest of the abdominal layers are used. The anterior sheath is closed with catgut and the skin with fine black silk. In addition, after applying a small dry sterile gauze dressing, the writer straps the wound with broad adhesive strips about two inches in width which go about two-thirds around the child's body. Even after stitches are removed at tenth day, this bandage should be replaced to prevent opening of the wound. Of course suturing of the wound layer by layer and thorough application of adhesive straps is a very important measure to be carried out as there has been reported in the literature several cases which died from a separation of the wound after the operation which were otherwise making an uninterrupted recovery.

POST-OPERATIVE MANAGEMENT

If it is possible to secure the services of a competent Pediatrician the child should by all means be placed under his supervision for the post-operative attention. Particular attention should be given to keeping the child warm during the operation and after its return from the operating room. If the condition necessitates it, hypodermoclysis of about 100 cc. of saline and glucose solution may be used or a transfusion of blood may be given using the median basilic vein or the longitudinal sinus. Two ounces of soda and glucose solution each is given by rectum and repeated every 3 hours for several treatments. This accomplishes two things: it supplies more needed fluid and combats acidosis which is so prone to develop in these half starved babies. For the first 24 hours the breast milk is extracted from the breast by means of a pump or by the hand and is fed to the child by means of a spoon. At the end of 24 hours the mother is allowed to lean over the bed or the child can be taken into her lap and allowed to nurse. As soon as the child has returned to its bed following the operation, it should lie in an inclined position with shoulders elevated. After a few hours there is no objection to allowing the mother to take

the child in her lap as it will be quiet and more easily managed than if forced to remain in bed.

MORTALITY RATE

With few variations from the above treatment as practised by several experienced surgeons in handling this disease, the mortality rate has been wonderfully decreased during the past 8 or 10 years. In Downes report of 175 cases, in 1921, less than 3% of these cases were unselected and many of them were operated on when in moribund condition and I would venture to say that Downes himself when allowed to select his cases has a much lower mortality rate than this. He gives his mortality rate as 1% in cases operated upon within the first four weeks. Strauss on 101 unselected cases had only three deaths with a mortality rate of less than 3%. Strauss however, performs a slightly different operation from the one described above in that after separating the muscularis, he grasps each side of the incision and stretches the wound open, thus shelling out the mucosa. He then utilizes the portion of the tumor mass as a flap and stitches it to the opposite side. The entire wound is then covered with omentum. In the hands of Strauss, as you have seen from his excellent statistics as quoted above, he has performed this operation many times with wonderful success. However, the operation has never been popular with others who have had a large experience with this disease, as they have adopted the Fredet-Ramsted operation as one of complete efficiency and absolute simplicity and that modifications are unnecessary. The author's experience has been limited to 14 cases upon which the Fredet-Ramsted operation was performed under local anæsthesia without a single death. The oldest child operated on was 11 weeks old, the youngest 3 weeks, heaviest child 11 weeks at time of operation, 6¼ lbs., the lightest child 3 weeks at time of operation, 4¼ lbs. Not one of these children vomited after the operation.

In conclusion, I wish to impress upon every one present the great importance of the early recognition of this disease which naturally would bring these patients to operation earlier and when they are subjected to operation before the general condition has become so debilitated and the child is suffering from starvation and extreme acidosis, the mortality rate should be almost nil as practically all of them should and will recover completely from the disease with a relief of all symptoms, and in a very short time to all appearances are normal in every respect including weight, general vitality, etc.

DISCUSSION

Dr. Thos. M. Green, Wilmington: I feel that Dr. Pittman has given us a very full description of the Fredet-Ramsted operation. There is hardly anything I can add to it that would make it better understood. I have had no experience with the local anæsthesia. First, as to the cases, it is a very difficult thing to know, as Dr. Sidbury points out, when a case is going to be a surgical or medical

case. The last case I saw showed every symptom of being an advanced surgical case and yet, under the dietic treatment he has just described, it improved and will get well without surgery. That is what happens in a great many of these cases. I think we have been a little too prone to operate in the past. That is our experience in Wilmington. We do less operating now. In a given surgical case, Dr. Pittman's remarks about the preparatory treatment are very important. A child is very much weakened from dehydration when it has a violent case, and it is very wrong to subject it to any surgery until it has been given fluids, particularly, glucose. Another important point he mentioned was the coagulation time. We don't operate any cases until that has been done. The only failure we ever had was a child that had a coagulation period of twenty minutes. It was reduced to eight minutes before operation but fifteen minutes afterward it was back to twenty minutes. That was our only fatality. About the tumor; we had several cases in which we couldn't feel them; they weren't hard, yet there was a very definite tumor shown at operation. I think Downes refers to them as "boggy" tumors. Because they are not hard does not mean that they don't produce the same amount of pyloric obstruction. We have had no trouble with the anæsthetic. A modified anæsthetic is given. Our habit is to wash out the stomach an hour before the operation. There is one point that it is well to stress, and that is the danger of tearing the duodenal mucosa. I have found it a little more expedient to pick up the torn area with a mosquito clamp and tie that with a fine silk ligature, rather than attempt to sew it. Another good point involved is, just before you close the abdomen to pass a tube into the stomach and inflate the stomach, so as to be sure there is no leaking point in the duodenum. Another important point is the preservation of body heat. Our children are operated on a hot water pad. We have been able to reduce the operative time to fifteen minutes from the time the child is first placed on the operating table until it goes out of the operating room. For that reason, I feel a modified anæsthetic for a period of fifteen minutes does the child no more harm than a local anæsthetic. One thing about the dressing. We never use over a four-ply gauze, for the reason that the child that loses an ounce of blood may show indication of hemorrhage. The idea being not to put too voluminous a dressing over a wound because you might conceal what would be a hemorrhage. The stitches are taken out on the 14th day. I think the difficulty in healing is because the child is debilitated. After all, what has appealed to me, is we have worked to a point where we feel we can do it all, from the beginning of the anæsthetic to where the child goes out of the operating room in fifteen minutes. I have done it in ten and in twelve minutes. I appreciate Dr. Pittman's paper very much and am grateful for the opportunity to discuss it.

Dr. R. L. Gibbon, Charlotte: I intended to discuss Dr. Pittman's paper but, unfortunately, had a paper myself before another section. However, I have seen a copy of Dr. Pittman's paper and want to congratulate him upon the work he has done in this line. He has had an unusually good mortality rate, unusually so in this class of

cases. I want to comment upon his use of local anæsthesia. I have been a little discouraged from trying that in these cases from what our friend Downes, of New York, says, who, I suppose, has done more of these cases than anybody else. Dr. Downes is not an advocate of local anæsthetic. Dr. Pittman seems to have gotten away with it in pretty good shape. I think one of Downes' chief objections was the straining of the child, that causes delay and handicaps you in closing up and getting out quickly. Dr. Pittman apparently hasn't had that trouble. I would be very strongly inclined, I think, after seeing his report of it, to try the local anesthesia. It seems to me it would be a distinct advantage, provided you could get through in the time Dr. Green has mentioned. I am very glad indeed to have seen Dr. Pittman's paper, and also very sorry I couldn't hear the previous papers. It is a subject that is very interesting and which hasn't been emphasized in our section of the country, I think, anything like as much as it should be, because this is a real life-saving procedure, and anybody who has a few cases of this kind to his credit will have a better feeling about everything.

Dr. A. McR. Crouch, Wilmington: Obstruction to the pyloris is a particularly interesting subject and I wish to thank the gentlemen for the privilege of hearing such excellent papers.

According to the teaching of Morse and Talbert of Boston we have two types of obstruction of the pyloris, the hypertrophic and the spasmodic. On account of the great difference in the treatment of the two conditions it is of great value to the patient to determine quickly as possible with which type of obstruction one is dealing. There are three points I wish to emphasize which may be of help in differentiating the two types.

1.—Determine the type of tumor (it can usually be found by examining both when the stomach is empty and when full). In the hypertrophic obstruction the tumor is round, hard, and about the size of an olive. In the spasmodic type the tumor is longer, cord-like, and often relaxes under the examining finger.

2.—In the hypertrophic type less food goes through the stomach. Therefore retention in the stomach is greater and constipation more marked than in the spasmodic type, and loss of weight is much more rapid.

3. In the hypertrophic type the administration of atropine Sulphate has no effect but when given to the physiological limit in the spasmodic type it lessens the vomiting and allows greater food intake, consequently an improvement in the patient's general condition.

In conclusion allow me to remind you of one important thing. In resuming the feeding of a past-operative Hypertrophic Pyloric case always begin with very weak formulas and give very small quantities until the collapsed intestines have regained their tone. The intestines are in a state of collapse because very little food has passed through them before operation.

Dr. Butler, closing the discussion: I am glad Dr. Crouch brought out the subject of the pyloric spasm. My experience has been, under these conditions, as to whether they are two separate conditions or not; I don't know. I had an idea they were one and the same condition. As far as feeling the tumor of the pyloric spasm, I have never been able to feel that. All the tumors I have ever felt have been a stenosis. My experience has been that it is doubtful whether these are separate conditions.

Dr. Sidbury, closing the discussion: I think, as Dr. Butler has said, it seems to me if we think of these conditions as in one the mild spasm and in the other the extreme stenosis, possibly we may have a better idea of the condition. I don't think it is agreed at all what is the biology of the condition or how we can separate it. That point is a very difficult thing and I don't know how it can be done very accurately. The point that Dr. Green brought out a few minutes ago. That child had everything; five weeks old and had been vomiting for two weeks. It had a very definite tumor that had been felt by a number of men, projectile vomiting and loss of weight. I put the baby on atropine and fixed its feedings, and gave it one tablespoonful of barley jelly before each nursing. I consulted Dr. Green and told him for one week the baby had gained nothing. I saw it on Sunday. On the following Monday week it had gained nothing. It wasn't convenient for Dr. Green to do the operation on Tuesday or Wednesday, and we had set the day for Thursday. On Wednesday the baby had gained four ounces. I called Dr. Green and told him we would put it off. The baby still gained and was not vomiting at all. The point of studying the child that Dr. Pittman brought out, I think, is a very important thing. Frequently when the operation is done well it may end sadly by a hemorrhage. At any rate, if a transfusion is not done, every preparation should be made to do a transfusion if it becomes necessary.

Dr. Pittman, closing the discussion: This is one of those things, the more we learn about it, the line of demarcation between a medical case and a surgical case becomes more difficult to determine. It has been hard for some of us to say when a case is medical and when it is surgical. Strauss has advanced the theory that the child who passes less than eighty per cent of the Barium through the pylorus within three hours should be operated upon at once. There, of course, is a reason for subjecting children to medical treatment, and in these cases where it is successful, of course, it is fine to avoid an operation. I think frequently when you subject a case to a week or two weeks of treatment, you have got a poor risk to operate upon, and it increases your mortality, and you have got a poor surgical risk, which primarily may have been a good risk. These cases I operated upon were all referred to me, but I didn't operate on one of these cases of true stenosis without trying medical treatment on them, trying the treatment, for instance, three days for the shortest length of time

and some of them seven or eight days. The reason I considered them surgical cases was because they had already been treated in that way. I think where the pediatrician says "this child is not ready," of course, they should not be considered by the surgeon. The proposition of the anesthetic. I am sure when Dr. Green and Dr. Gibbon first try their cases with a local anesthetic, they will be so delighted that they will not use a general anesthetic any more. As a matter of fact, too light an anesthetic is worse than no anesthetic at all. If you get a child excited he is not fully relaxed, and he responds. I think if you haven't a complete anesthesia you would be just as likely to cause an expulsion of the stomach as under a good local anesthetic. In my experience, I haven't had any trouble with it. I am very careful to make a small incision. As to the pyloric spasm, I believe usually in these cases the symptoms may be due to pyloric spasm; sometimes in the early stages it is a pyloric spasm, but as the tumor advances it becomes a stenosis. I thank you all for your kind discussion.

GASTRIC AND DUODENAL ULCER FROM THE MEDICAL VIEWPOINT

D. Heath Nisbet, M. D., Charlotte

In any discussion of gastric and duodenal ulcer it is well to consider their etiology. Practically the same theories have been advanced for both conditions and they will be considered together. The best known theory is, that the action of the acid gastric juice on the damaged or weakened mucosa of the stomach and duodenum, causes breaking down and ulceration. This is supported by the observation that 95% of all ulcers occur in those areas where the acid juice is in contact with the mucosa, namely, the pyloric portion of the stomach and the first portion of the duodenum. It is well to remember, however, that ulcer occurs where acid values are normal or even entirely absent. The fact that a low or normal acid is not found does not prove that it was not high at one period during the development of the lesion and further, a normal acid might be corrosive to a constitutionally weak mucosa.

Injuries to the different portions of the brain and cortex, causing local contraction of the small arterioles of the pyloric and duodenal regions with ulcer formation, has been noted in experiments, by Sciff, Ebstein, Nothnagel and Brown Sequard. The above condition plus the action of certain toxins is advanced by Morris.

Virchow and Talma showed that certain vagus lesions causing spastic contraction of the muscularis, resulted in ulcer formation. Lichtenbelt proved that irritation of the vagus and sympathetic produced ischæmia and that this was followed by ulcer. Eppinger and Hess have shown that the vegetative nervous system plays a part, at times. Rœssle notes the occurrence of the disease in connection with lesions of other abdominal organs, as gall bladder disease, appendicitis and constipation. The infectious theory, of blood borne streptococci, is championed chiefly by Rosenow. Sippy and Lyon empha-

size the importance of infections in the paranasal sinuses, teeth and gums, which drain into the stomach and undoubtedly cause infection. Stiller claims that gastroptosis and atony with delayed emptying time, allows the gastric juice to stay too long in contact with the gastric mucosa and causes ulcer. Others think, in duodenal cases, that it may be due to pressure of the liver, gall bladder and pancreas.

With these and many other theories advanced, and none of them definitely proven, we must face the fact that ulcer of the stomach and duodenum is not a simple, local disease but a complex affair, and that it should be considered as such in the diagnosis and treatment. Smithies thinks that very little progress has been made in treatment, in many years, due to the lack of investigation of the causes of the systemic upset, preceding or accompanying the local gastric or duodenal condition. He called attention eight years ago, to the fact that we are dealing with a form of systemic or constitutional disturbance, in which the ulcer is the local gastric or duodenal complication.

Ulcers occur more frequently in men than in women, and most often between the ages of 20 and 40. They attack those who apparently are in the best of health and nourishment. It is well to remember that a person developing a stomach complaint after 30 is dangerously near the cancer age, and the condition should be thoroughly gone over. Careful stomach tests should be made and most important of all, an X-ray study should decide the exact nature of the lesion and its location, if one is present. This should apply to all cases of gastric disorder, where the diagnosis is doubtful, because in a large percentage of all cases, it will either prove ulcer or absolutely rule it out. There are some cases where X-ray will not demonstrate the ulcer but these can be diagnosed from the history and the clinical findings and should have the benefit of ulcer treatment.

The clinical symptoms vary within wide limits. They may date back to early life, coming on periodically, or they may be relatively recent. A feeling of fullness and pressure in the epigastrium and belching of gas, may be the only complaint, but it is important to remember that even with these few symptoms, they usually occur, not during, but 2 to 5 hours after the meal is taken. Some cases are ushered in by a severe hemorrhage. In gastric cases by hematemesis. In duodenal cases by bowel hemorrhage. Both conditions occur less frequently than was formerly supposed. Other cases may have the typical symptoms of pain 2 to 5 hours after meals, a painful sensation of hunger, and the night pain which occurs rather strikingly at 12 and 2 A. M. All these symptoms are usually relieved by taking food, water or alkalies.

The physical examination may or may not help us. In many cases it gives us no significant information. The finding of a tender pressure point above and to the right of the umbilicus is very suggestive of pyloric involvement.

The fractional stomach analysis is a distinct aid. We must remember however, that in a large series of cases of proved ulcer, only 30% showed an increase in acid, 45% were within normal limits, and in 25% it was low or absent. Where there is obstruction to the

pylorus and retention of food elements information of value may be obtained by taking the fasting contents 12 hours after a motor meal. The finding of more than 2 ounces points to obstruction. Occult blood is found in a small percentage of cases and is of value where no meat has been taken for several days and where trauma due to swallowing the tube can be ruled out. The string test of Einhorn, we do not use, and many believe its importance is exaggerated. Occult blood in the feces is important, where local bleeding in the intestines, and in the rectum from ulceration or hemorrhoids can be excluded.

The differential diagnosis is difficult here, as in all other intra-abdominal conditions. It is well to consider gall bladder disease, appendicitis, functional gastric conditions, peri-pyloric and peri-duodenal adhesions, and epigastric hernia.

Given a case of proved gastric or duodenal ulcer, just what types are we justified in giving medical treatment, and which should be declared surgical. I will answer by giving the indications for surgical treatment. 1. Where we have reason to believe that carcinoma is developing at the seat of the ulcer. 2. High grade pyloric obstruction, due to thickening of the tissues, which fails to yield to the medical treatment to be outlined later. Sippy believes that 85% of all cases of pyloric stenosis, due to peptic ulcer, disappears after two or three weeks of medical treatment. 3. Perigastric or periduodenal abscess or adhesions causing obstruction. 4. Perforation into the peritoneal cavity, or massive hemorrhage. 5. Hour glass stomach. 6. Where ulcer is due to a nerve lesion, no treatment will be of any benefit except excision of the ulcer bearing area.

In advocating surgical intervention I believe that the ulcer bearing area should be excised wherever it is possible. We see so many cases of gastro-enterostomy which have failed to give relief.

Before going on with the treatment, we should determine whether other foci of infection are present and investigate carefully the paranasal sinuses, teeth, tonsils, other intra-abdominal conditions as appendix, gall bladder, prostate gland, and female pelvis.

In discussing the medical treatment, I wish first to mention briefly the various treatments which have been tried out and then in some detail the outline which we follow.

The strict diet of Leube is useful only in bleeding cases. The Lenhartz diet is not used very extensively in this country at the present time. Einhorn, Gross and Held are advocates of duodenal feeding. Kauffmann uses large amounts of silver nitrate to control the acidity. A Chicago authority advocates using foods which do not stimulate the flow of gastric juice, controlling the discomfort by large doses of bismuth. Smithies has recently advocated giving no food by mouth for 3 to 7 days, with rectal feeding during this period; then the extensive use of carbohydrates and starches, predigested milk in small amounts and little if any alkalies. Sippy's modification of Dubove's method of alkalinization, to which he has added the use of the duodenal tube in removing excessive amounts of gastric juice,

is perhaps the most widely used and most successful treatment we have today.

The treatment I use is a modification of the Dubove-Sippy method, being a little less complicated. Rest in bed is insisted upon for three to five weeks. The medication consists of an anti-spasmodic of Tincture of Belladonna and Hyoscyamus three times daily before meals. Two powders are used, being given alternately after each feeding in teaspoonful doses. Powder No. 1 consists of equal parts of sodium bicarbonate and bismuth subnitrate. Powder No. 2, of equal parts of calcined magnesia and bismuth subnitrate. The diet during the first week is three ounces each of milk and cream every two hours, eight feedings being given daily. In the second week, three raw eggs are added to the milk feedings and two cereal feedings are given in addition. The third week, additional allowance consists of all cereals, baked white potato, light sweets as gelatin, ice cream, cup custard, etc. The fourth week, rare steak twice daily (only the juice being swallowed), puree of vegetables, chopped chicken and toast. During this last week the patient is allowed to sit up for a short time each day.

Spasm and pain are controlled by hot packs to the abdomen, which are given for twenty minutes as many times daily as needed. The magnesia will usually control the bowels. When it proves too laxative substitution of the bismuth soda powder can be made for the one containing magnesia. Before the patient leaves the hospital, an X-ray checkup should be made to determine the amount of improvement, judging by the size of the lesion, the amount of spasm and the change in the deformity.

In giving the final instructions to the patient, we must emphasize the fact that the ulcer is not entirely healed and that it will be necessary for them to follow the same type of diet with the medication for six to eight months. And further it will be necessary to report at stated intervals for study and X-ray checkup to note the progress being made. I believe that many of the failures in treating ulcers by medical methods is due to the fact that the follow up system is not used and they are not given definite instructions as to their diet after they go home. The same applies to certain operative cases where gastro-enterostomy has been done, or where the ulcer bearing area has not been removed. These patients should be referred to a competent internist for regulation of diet.

CONCLUSIONS

1. Each individual patient should be studied as an entity and all possible foci of infection should be eliminated.

2. The X-ray is the most valuable single diagnostic test that can be made, provided it is in the hands of a skilled operator.

3. No diagnosis of ulcer should be made until the patient has taken atropine until the physiological effect is obtained.

4. The diet and medication should be continued for six to eight months after the patient is discharged.

5. The indications for surgical treatment of ulcer are very definite. All cases of acute ulcer, or uncomplicated cases should have the benefit of careful medical treatment before operation is advised. On the other hand, if medical treatment has been given and there is no improvement, or cessation of symptoms, operation is advisable. The operation should in all possible cases remove the ulcer bearing area.

GASTRIC AND DUODENAL ULCERS FROM A SURGICAL POINT OF VIEW

Addison G. Brenizer, M. D., Charlotte

The older literature on the subject of gastric and duodenal ulcers is of great volume but not of so great value.

Gastric ulcer was considered to be a common disease, easily diagnosed on finding certain symptoms, and duodenal ulcer was not known, considered to be rare and the diagnosis difficult or unattainable.

In reality a "chronic ulcer" of the stomach or duodenum is a visible and palpable lesion present for months or years. In it are seen evidences of destruction and of stubborn repair, there is a crater of varying size, the ulcer involves at least the muscular coat and sometimes all the coats, the adhesion of the ulcer base to the neighboring structures presents a gradual perforation. In these ulcers there are intervals of freedom of activity; an ulcer in the callous state becomes more active at the edges or the development of acute ulcers around the chronic ulcer or in an area of the stomach opposed to it. A healed scar breaks down at times; acute infection may arouse activity in a dormant ulcer.

In "acute ulcers," chaps, fissures, erosions or extensive surface destruction of the mucosa or deeper layers are found. The vascular supply may be impeded, making a defenseless area which the gastric juice attacks. A heavy infection or toxemia makes these ulcers develop rapidly and they probably heal rapidly. Hemorrhages or perforation show their clinical importance. Acute ulcers may be multiple, a chronic ulcer may begin in an acute ulcer that refuses to heal. The chronic ulcer in the stomach or duodenum causes the severe, protracted and recurring attacks.

The term "juxto-pyloric" ulcer is unnecessary as the ulcer is either in the stomach or in the duodenum. A duodenal ulcer is usually half an inch or more from the pyloric vein and the pyloric white line, but may extend up to them or beyond into the stomach and then take on the significance of a gastric ulcer. A gastric ulcer is rarely within an inch and a half of the pylorus and is generally found on the lesser curvature of the posterior surface. The ulcer very rarely begins exactly at the pylorus.

Clinical symptoms of ulcer of the stomach are: pain, vomiting and hematomesis; pain being the most important. In the same patient after the same meals the pain regularly appears after the same interval of comfort. The rhythm of the pain deserves attention. In

gastric ulcer the rhythm is: food, comfort, pain, comfort and the same repeated; in duodenal ulcer it is: food, comfort, pain and the same repeated. In gastric ulcer the pain following the comfort produced by food, appears earlier in 1½ to 2 hours and does not last so long; not up to the taking of the next meal, as is the case in duodenal ulcer.

Seasonal variations are more common in duodenal ulcers than in gastric ulcers. Hematomesis often indicates gastric ulcer. Hemorrhage, however, merely means a considerable lesion of the œsophagus, stomach or duodenum. Such a lesion in the stomach may be an acute or chronic ulcer. Hematomesis may be due to toxemia of appendicitis or other infections, to cirrhosis of the liver and to splenic anemia and so does not always indicate a chronic gastric ulcer. In duodenal ulcer hematomesis and malæna may occur, the latter being more frequent and greater in quantity. (Mrs. Spencer.)

Study of the clinical history allows a confident diagnosis of duodenal ulcer. A gastric ulcer on the other hand, is much less common and there should be hesitancy in diagnosing it. In cases of gastric ulcer other methods of examination than clinical history may give light. A diagnosis of gastric ulcer upon clinical evidence may be accepted if confirmed by the radiologist. Unless a gastric ulcer is seen, its presence is never certain. A diagnosis of gastric ulcer should only be made where there is certainty. A thorough confirmatory X-ray study should be made in both gastric and duodenal ulcers, accepted more persumptively on the basis of the deformities of the duodenal cap in the case of duodenal ulcer, but only on the basis of the "niche" and "notch" opposite in the case of gastric ulcer.

After special examination for gastric or duodenal ulcer and before treatment is planned, medical or surgical, a general survey of the patient by a reputable internist must be made and notice given specially to sources of infection in the mouth, the accessory sinuses, genito-urinary tract, rectum and colon.

MEDICAL TREATMENT

I. Careful medical treatment generally alters the gravity of the symptoms in a short time. The pain will disappear and one can take simple foods. The "attack" of duodenal ulcer may end in a few days. The "attack" of gastric ulcer ends in two or three weeks. The symptoms seem to disappear as soon as the ulcer shows signs of healing; the ulcer remains large and unhealed and becomes "latent."

Medical treatment must be carried out in ignorance of the exact condition in any ulcer and of the associated infections within the abdomen. In 718 cases reviewed by Moynihan the appendix was removed 307 times and the gall bladder 23 times. The writer regards disease of the appendix as a primary source of infection. The colon seemed in some cases to play a part in a causation of gastric ulcer.

The inter-relationship of abdominal diseases is still surmised rather than known. Medical treatment is of value as a temporary solace, of postponing of discomforts or of impending dangers rather than as a cure.

II. Medical treatment loyally followed during an "attack" and after seems unable to prevent recurrence of symptoms in many cases. Many of them turn to the surgeon for relief at a late hour. The cure following such treatment may last from a few months to a few years. The writer has not met with half a dozen patients that have not had recurrence. A scar in the stomach or duodenum of a patient operated for a disease elsewhere in the abdomen is very rare.

In the "recurrent attacks" catastrophes may appear suddenly. If hemorrhage occurs it may be arrested by rest in bed, abstinence from food, intravenous injection of calcium chloride, or blood transfusion until the patient can risk operation.

Records from the Leeds Infirmary for the last ten years show: of gastric ulcers 75 deaths were due to hemorrhage or perforation and peritonitis. These catastrophes may occur in "acute" or "chronic" gastric ulcers. There were 61 deaths from perforation, in 60 cases the ulcer was of chronic type. There were 14 deaths from hemorrhage; 13 were chronic ulcers, one was acute and a terminal condition in advanced cardiac disease. It is the chronic ulcer in an acute stage that bleeds or perforates and causes death.

During the same period there were 129 deaths from hemorrhage from a duodenal ulcer or from perforation. There were 12 deaths from hemorrhage, in each case a chronic ulcer. There were 117 deaths from perforation. Twelve of these were acute ulcers. In four of the twelve chronic ulcer was present and had perforated, the acute ulcer being incidental. The remaining 105 were chronic ulcers. Perforation is found more commonly in cases of chronic ulcers. Patients are brought to the hospital in a moribund state after the catastrophe has occurred. Records show that the majority of patients have had treatment on several occasions.

III. In case of gastric ulcer treated medically the problem of carcinomatous degeneration at the edge of a simple ulcer must be considered.

In cases of cancer of the stomach two out of three give a history suggesting gastric ulcer. In some such cases an ulcer, usually chronic, may be found at the time of operation. Naked-eye examination reveals no malignancy, but the microscope shows early malignant changes at one edge only of the ulcer. This has been the case in 18.5 per cent of the supposed chronic ulcers. Again a chronic simple ulcer may be seen, with one edge thickened, upraised, red and softer than the normal rigid, steep or overhanging edge. This part shows carcinomatous changes. In one case one patch showed columnar carcinoma and another scirrhus at opposite edges. The symptoms of duodenal ulcer may be unequivocable and persistent on and off for years. At the operation the old duodenal ulcer is seen to have transgressed the pyloric line and the gastric edge of the ulcer is malignant.

Examinations of specimens of gastrectomy performed in the early stages of carcinoma give the only trustworthy evidence of the incidence of cancer in ulcer.

The writer is anxious as to the destiny of any patient suffering from gastric ulcer. If the change from a simple disease to a malignant is possible, gastrectomy in cases of chronic gastric ulcer has advantages over any other operation. The real chronic ulcer is a rare disease. If the clinical diagnosis alone is accepted, the proportional incidence of carcinoma among such cases is certainly small.

IV. In the case of gastric ulcer does the medical treatment often permanently heal the ulcer? We must know first that the ulcer has been present, with evidence more than clinical, secondly whether radiology which confirms the diagnosis now shows that the ulcer is healed, and thirdly, that the healed ulcer has not broken down again later. There is almost no testimony that fulfills the essential conditions.

The dangers of medical treatment are formidable. The mortality is greater than in surgical treatment, even though only the more serious cases are submitted to operation. As regards the risk to life or the continual return to suffering medical is far less effective and more dangerous than an operation. Medical treatment should be raised to a general level of efficiency and safety equal to that which surgical treatment has reached. The occasional scars of chronic ulcers of the stomach or duodenum in the post mortem room show the ulcers can be induced to heal and perhaps to remain long healed.

Acute gastric or duodenal ulcer is the province of the physician, not surgeon, except when accompanied by recurrent hemorrhage or perforation.

I shall discuss from a surgical standpoint only, gastric and duodenal ulcers. Over a third of a century has elapsed since the foundation of gastric operations was laid, and curiously enough hardly a single revolutionary method has been developed. Technical modifications have been brought forward, but the partial gastrectomy of Billroth; enlarging the pyloric orifice of Heineke-Mikuliez and Kocher; and gastro-intestinal anastomosis of Wœlfer, von Haberer and Roux remain the basal procedures.

While until recently most surgeons have advised simple gastro-enterostomy in the treatment of ulcers of the stomach, the unsatisfactory results in a certain percentage of cases have created a number of advocates of more radical procedure.

The advantage of gastro-enterostomy is that it will present easier drainage of the stomach, it will bring about some admixture of the alkaline intestinal contents with the acid stomach contents and will give rest to the ulcer. It is likely that gastro-enterostomy has only a mechanical action. It is strange that no enduring physiologic basis for treatment of stomach ulcer by gastro-enterostomy has been developed.

Gastro-enterostomy may be combined with excision of the ulcer or with Balfour's destruction of the ulcer by cautery. Balfour's operation destroys the ulcer completely and because of the selective action of heat upon the cancer cells, destroys any earlier malignant degeneration at the margin of the ulcer. This operation is extensively used.

It is likely best used for ulcers of small size high up on the lesser curvature associated with pyloric spasm and gastric retention. The removal of these ulcers by gastrectomy would sacrifice the whole stomach. The method of gastro-enterostomy in Y combined with jejunostomy is valuable in cases of extended indurated inaccessable ulcers, grown to the diaphragm, or liver or pancreas. The operation of jejunostomy gives rest to the stomach and a chance for the ulcer to heal. Radiology shows that the ulcer has a tedious and protracted healing.

In chronic ulcer with sclerosis and low-acid values without obstruction, excision and suture or cauterization is more useful than gastro-enterostomy; also when these operations unduly distort the stomach, resection is still more preferable. Moynihan finds few cases in which gastrectomy cannot be performed with satisfaction. In ten years his mortality has been 1.6%, a little lower than the lowest published death rate from Balfour's operation. He has introduced the "anterior no-loop" method. The jejunum is brought from its flexure across the transverse colon from left to right and applied to the divided stomach so that the proximal part of the jejunum joins with the greater curvature. My preference of gastrectomies would be first for the type of Billroth I, where the pylorus or duodenum is anastomosed directly to the stomach and secondly for the Mayo modification of the Billroth II, where the proximal end of the duodenum is closed, and the proximal first loop of the jejunum brought through the transverse meso-colon is applied to the still unclosed end of the stomach. The fatal angle of the Billroth I operation has disappeared with better methods of suture and this operation as stated, is to be preferred to the Polya or Billroth II when practicable. Moynihan feels that gastrectomy should be used except when the condition of the patient prohibits any major operation, or when the location of the ulcer makes this operation impracticable.

He states that gastrectomy is a treatment of chronic gastric or duodenal ulcers that with the least risk makes all symptoms subside. prevents a recurrence of the disease and any disorder associated with the operation.

SURGERY OF GASTRIC AND DUODENAL ULCERS

Charles S. Norburn, M. D., Asheville

In considering the operative treatment for gastric and duodenal ulcers a great many factors must be carefully weighed. To begin with, there is no denying the fact that ulcers can and do heal, that even chronic ulcers can and do heal without treatment. This fact will be strongly impressed upon anyone doing many autopsies, for large numbers of gastric and duodenal ulcers, some healed, some open, will be found in patients who have succumbed to some condition totally unrelated to the stomach or duodenum, and in whom no suspicion of ulcer occurred in the history. Then there is the operative mortality, probably greater than the two per cent usually claimed for gastro-

enterostomy, and the incidence of gastro-jejunal ulcer, probably greater than the two per cent usually given. Again, there is that small number of patients who will not be relieved and those in whom the operation will result disastrously.

On the other hand, when medical treatment fails or some danger threatens, we have the surgical treatment to fall back on. In addition to the promise of a speedy relief of symptoms, an operation reduces the possibility of hemorrhage and perforation to a minimum, and in cases of gastric ulcer greatly reduces the chance of death by cancer.

My own rule is that:

First, surgery is indicated for duodenal ulcers when the ulcer is perforating, bleeding or causing distressing and unmanageable symptoms.

Second, surgery is indicated in gastric ulcers under these same conditions and also is indicated when the lesion does not heal under medical treatment in a reasonable length of time. This last out of respect of the possibility of the ulcer being malignant or subsequently undergoing malignant change.

Third, surgery is of course indicated in all acute perforations of peptic ulcers.

It is now generally believed that most peptic ulcers are septic in origin. Acid-loving streptococci, being carried by the blood stream from some focus of infection, lodge in the end arteries of the stomach or duodenum, producing a devitalized area which is readily digested by pepsin in an acid medium, thus forming an ulcer. Rosenow has isolated these streptococci from ulcers and by injecting them into the veins of animals has produced peptic ulcers in a high percentage of cases. The treatment begins, therefore, with the cleaning up of any septic foci found. Teeth, tonsils, sinuses, genito-urinary tract, etc., are thoroughly gone over.

The preöperative treatment of these ulcer cases usually consists simply of withholding food and drink a few hours to let the stomach empty and sterilize itself. However, in cases of pyloric obstruction, if the food retention has been extreme or if there is a large dilatation of the stomach and the patient is emaciated and dehydrated, the risk may be reduced by placing them in the hospital and giving gastric lavage every four or six hours for a few days. Fluids should be given by rectum or subcutaneously.

When the abdomen is opened a very careful examination of the entire stomach and duodenum is made. If no lesion is found no operation is performed. That is to say, gastro-enterostomy is never done on the strength of symptoms alone. As the stomach is stripped through the fingers a mass the size of a buckshot may be felt. Over seventy per cent of peptic ulcers are found on the duodenal side of the pyloric vein, practically all of these being above the entrance of the bile duct. In the examination of the duodenum care is taken to exert no tension on the stomach, thus preventing the appearance of an anemic spot just below the vein—this is some times mistaken for

ulcer. Unless the ulcer is easily demonstrated, Stimson's sign is of the greatest value: If the suspected spot is rubbed with a piece of gauze and examined a few minutes later an area over the ulcer will show bright red stippling, due to the distension or rupture of an unusual number of new capillaries.

The operative treatment of simple duodenal ulcer, either obstructive or non-obstructive, is posterior gastro-enterostomy. As there seems to be some physiologic connection between the duodenum and appendix, the appendix is usually removed at the same time.

Of all the operations devised for the stomach and duodenum, that of posterior gastro-enterostomy is the one of greatest value. It seems an established fact that a technically perfect posterior gastro-enterostomy will cure the vast majority of duodenal ulcers.

Both Judd and C. H. Mayo strongly condemn Finsterer's practice of resection of the pyloric end of the stomach for duodenal ulcer. The idea of this resection is to remove the secretion-forming portion of the stomach, thus preventing the secretion from activating the acid-forming glands in the cardia. Judd and Mayo freely admit that the stomach so resected is rendered less acid. A very fair proportion of such patients develop achylia gastrica, but they hold that the post-operative functional results are worse than the original ulcer, and say, "Let the punishment fit the crime; do not resect a stomach for a duodenal ulcer that a simple gastro-enterostomy will cure."

For some reason cancer develops in the parts of the body which are normally acid or which have become acid, and only rarely develop in an alkaline field. Cancers are found associated with ulcers in the acid stomach, but not with ulcers of the duodenum, where the reaction is alkaline. Therefore, as has been said, the duodenal ulcer is not usually excised. However, when the bleeding type of duodenal ulcer is encountered simple gastro-enterostomy will not suffice. Such an ulcer must be resected or cauterized, and following this some form of pyloroplasty may be necessary. Perhaps the resection is best accomplished by a curved incision going through the pyloric ring and extending downward below the seat of the ulcer. After resection of the ulcer the incision is sewed transversely. Finney's pyloroplasty is now seldom seen.

It has long been held that perforation does not occur after gastro-enterostomy, yet there creep into the literature from time to time reports of cases of perforation occurring within the first few days after operation. The account of one of my own cases will, I believe, be of interest.

Under fluoroscopic examination this duodenal ulcer was seen to have the niche of a deep perforation. At operation nothing unusual was noted. The ulcer was a moderately large one, not acutely inflamed, and not patched over with lymph. It was exhibited to the onlookers with about the usual amount of handling. Then a gastro-enterostomy and an appendectomy were done. Upon taking a final look at the ulcer before closing it was seen that a small perforation had occurred through which the contents of the duodenum were now

running. The small amount of trauma incident to the operation had caused the perforation. So if there is any doubt whatever about the thickness of an ulcer's base it seems wise to throw a purse-string suture around it.

Gastric ulcer is a far graver condition both as regards the immediate operative mortality and the life expectancy following operation. Not only do the indications for surgery of the duodenal ulcer hold here, but there is the additional factor of malignant degeneration to be considered.

In a pathological study of 216 resections of the stomach for ulcer, etc., MacCarty concludes that 71 per cent of the cancers are associated with ulcer, and that 68 per cent of ulcers are associated with cancer. Whether these figures are too high or not it seems certain that the basement membrane of some of the gland tubules at the edge of the ulcer rupture, and the epithelial cells infiltrate the stomach wall. There have been several deaths from cancer in which this condition was noted at the time of the operation, but the ulcer was not given wide enough margin. The rœntgenologists predict cancer in all gastric ulcers as large as a twenty-five cent piece, and they are right in the great majority of instances. Gastric ulcers should be removed either by a simple resection one-half inch beyond their margin or by a more or less extensive resection of the stomach, depending upon the site and character of the ulcer. When simple resection is done a gastro-enterostomy is also performed.

While the resection is done chiefly because of the question of subsequent malignancy, it would still be justifiable even if this question was not involved, for it has been shown at the Mayo Clinic that where either excision or gastro-enterostomy alone is done, the symptoms recur in from 30 to 35 per cent of cases, and it is only by doing both that good results may be obtained.

For the extensive resections the anterior Polya operation is the one most often used. This operation of resection of the pylorus, turning in the open end of the duodenum and uniting the open end of the stomach to the jejunum at 16 to 18 inches from the ligament of Treitz, carries with it a mortality of from six to ten per cent but promises excellent functional results.

When the patient is half starved, dehydrated and in poor general physical condition the Billroth Number Two is chosen. The first stage consists of exploration and a posterior gastro-enterostomy, and the second stage consists of partial gastrectomy, turning in the ends of the duodenum and the stomach.

I might mention an important point in this connection. Not infrequently a chronic ulcer of the duodenum coëxists with the gastric ulcer or cancer. If such be the case there is a shortening of the duodenum. The distance from the pylorus to the papilla averages normally 7.9 cm. In chronic duodenal or completely healed ulcer the distance may be as short as 4 cm. Should this fact not be taken into consideration too much of the duodenum may be removed, and when its open end is inverted the common bile duct and the ducts of the pancreas may be blocked.

In all of these resections C. H. Mayo emphasizes the importance of covering the suture line fore and aft with omentum. He says this simple procedure has resurrected the Billroth operations and the Polya operation from oblivion.

Just a word about acute perforation of gastric and duodenal ulcers. I have operated upon seven such cases. All were opened within the first few hours and, as is usual when this is done, all recovered. Only one case was of a stomach ulcer. Here the usual complete resection and gastro-enterostomy was done. Of the duodenal ulcers the perforations were closed. No attempt was made to deal with the ulcers further than this. Posterior gastro-enterostomy was done in four of the six cases. This was done not only because I feared stricture in some instances, but because, while I believe perforation will cure the cases of embolic ulcers which have originated a few hours or days before, I still doubt that it cures old chronic ulcers which have been giving symptoms for years. In only one of these severe cases of perforation was a general washing out of the abdominal cavity done. This was in a case which had perforated immediately after having eaten a large meal. The doctor summoned had attempted to wash out the stomach and had washed out most of the stomach contents through the perforation. This also was the only case drained. Here a Penrose drain was carried into the pelvis for a few days.

I did not have an opportunity to follow all of these patients after they left the hospital. Their stay in the hospital was not a great deal different from the usual post-operative course when no perforation has occurred.

The discussion as to whether it is wise to do a gastro-enterostomy in those cases in which the perforation can be closed without forming a constriction of the pylorus is open. Of course, the first consideration is the immediate operative recovery of the case at hand, even though a complete operation may have to be done later.

From this short series I gather only one fact in regard to the immediate operative recovery. That is that drainage is of very little importance, the chief treatment being an early closure of the perforation and then Fowler's position, morphia and water.

The study of the healing of gastro-enterostomies throws considerable light on what the post-operative care of these patients should be.

On or about the seventh day a rim of mucosa surrounding the stoma sloughs as a result of suture pressure, and at about this time the absorbable suture line is softened and the anastomosis may be torn apart about as easily as though it were constructed of wet paper. Then firm healing begins to take place by granulation tissue, and the denuded ring is covered with epithelium at about the fourteenth day.

At the present time I believe it is usual to give the patients nothing by mouth for four days. Then they are given liquids for three days, and just at the time when the anastomosis is weakest, on or about the seventh day, they are allowed some small amounts of soft food. Robertson, who has made such a thorough study of this,

says there is nothing to support this practice from the viewpoint of the pathologist. He says the patients may be fed the first three or four days while the suture line is firm and before the sloughing begins, and that gastric alimentation should then proceed with extreme caution until the fourteenth day. His arguments are based upon pathology, and as a pathologist he constantly marvels at the vast number of patients who are fed rather liberally at the time when anastomosis is weakest, and who still get well. But, in attending autopsies at the larger clinics, I have seen a sufficient number of cases which have leaked to impress me with the soundness of his views.

X-RAY DIAGNOSIS OF GASTRIC AND DUODENAL ULCER

C. C. Phillips, M. D., and R. H. Lafferty, M. D., Charlotte

It has been only a few years since X-Rays were first used in the diagnosis of gastric and duodenal ulcer. Credit is due Hammeter for the first effort in this field. Although his method proved of little direct value, it served to stimulate others to improve his ideas, until at the present time, by much care and thoroughness in technic more than 90% of ulcers, both of the stomach and the duodenal cap, can be correctly diagnosed. It was Reiche who first succeeded in positively demonstrating an ulcer cavity on screen and plate.

Our usual procedure is to give the patient twelve ounces of a mixture of barium sulphate, malted milk, and water and to make a careful study of the stomach and duodenum by both fluoroscope and plates. The size, position, contour, mobility, shape, and motility must be observed, as abnormality in any of these may be a link in the chain leading to correct diagnosis.

Four types of ulcer must be considered:

First: The ulcer may be only a small erosion of the mucous membrane, which is not deep enough within itself to cause any defect in contour, and in these cases we must depend on indirect evidence upon which to base our conclusions.

Second: The ulcer may have progressed until it shows as a definite protrusion from the contour of the wall, in which case we also have our secondary manifestations. This type is known as the niche or penetrating ulcer.

Third: The ulcer may have progressed still further and perforated the wall, and extended into an adjacent structure, in which case an accessory pocket is demonstrated, the indirect signs being present in these cases also. This type is known as the perforating ulcer.

Fourth: Many observers describe a carcinomatous ulcer, but there has been much discussion as to whether these are primarily carcinoma or carcinomatous degeneration of chronic ulcer.

We have two direct signs of gastric ulcer, viz: the niche and the accessory pocket, either of which when positively demonstrated, even with no other signs present, is diagnostic. Either of these signs, if

present on a curvature can readily be demonstrated in the antero-posterior view, and can often, if situated on anterior or posterior wall of the perpendicular portion of the stomach, be demonstrated in a lateral or oblique view. If situated on the anterior or posterior wall of the pars pylorica, it is in almost every case impossible to demonstrate the niche or the accessory pocket, and it is necessary that at least some of the indirect signs be present or the lesion will escape detection.

The indirect signs are: spastic manifestations, including spasmodic hour-glass stomach, incisura, and diffuse gastrospasm; organic hour-glass stomach; retention of part of the test meal for more than six hours; abnormalities of peristalsis; alteration in mobility; and localized tenderness. These signs, when appearing in certain definite groups are positively diagnostic, but not one of them alone is sufficient evidence on which to base a diagnosis. The chief and most constant of these signs is spasm, which occurs most often in the form of an incisura if ulcer is present. Any of the different types of spasm may be caused either by ulcer, or by pathology in other abdominal organs. Spasm which is caused by extrinsic conditions will entirely relax if belladonna in some form is administered to physiological effect. A diagnosis of ulcer should never be made from indirect sign groups alone in which spasm takes a prominent place until re-examination while the patient is thoroughly under the influence of belladonna. We experience better results if the belladonna is given over a period of a few days instead of being given in a few large doses on the same day. An incisura with a pressure tender point opposite it, observed along with six hour retention, is in almost every instance diagnostic, though the tender point must be narrowly circumscribed, as a large percentage of patients who do not have ulcer have some tenderness in the epigastrium. This group of signs may be observed when the incisura is caused by an adhesion band, but if there is a tender point present in this condition, it is as a rule not very sharply localized. The same group may be caused by pathology in organs adjacent to the stomach, in which case the spasm would be relaxed by the use of belladonna. An incisura is often caused by scar tissue from a healed ulcer and when found is a frequent cause of error in diagnosis.

Organic hour-glass stomach produced by ulcer, in most cases gives the stomach the shape of the capital letter "B," while that of cancer, as a rule, gives it the shape of the capital letter "X" and the canal of the hour-glass in the latter condition is, in almost every instance, longer. In both these conditions the contour is the same at each observation, while in the spasmodic type the contour will be seen to change during screen examination, though in some instances the change may be very slight.

The six hour residue occurs in approximately fifty per cent of cases, and though not alone diagnostic, when present is evidence enough to arouse suspicion. The residue may be observed with the ulcer in any location, and is no doubt due, in most cases, to reflex spasm of the pyloric sphincter, as only a few ulcers involve the pyloric orifice.

In almost all early cases there is hyperperistalsis, and the waves never pass smoothly over the affected area. In cases of long standing the stomach may have become hypotonic and dilated, and in many instances the peristaltic waves can scarcely be seen. In these cases there is almost invariably six hour retention.

Limitation of mobility is not infrequently observed to be caused by adhesions resulting from ulcer, this most often being observed in cases of perforating ulcer.

Several years elapsed after X-Rays were proven of value in the diagnosis of gastric ulcer before it was used to any definite advantage in diagnosing duodenal ulcer; although at this time the method is as accurate in this as in gastric ulcer.

In the duodenum, as in the stomach, we may have the small erosion of the mucous membrane, the niche type or penetrating ulcer, the perforating ulcer, and rarely the so-called carcinomatous ulcer. As in gastric ulcer, positive demonstration of the niche, or the accessory pocket is diagnostic. By far the most frequent type of duodenal ulcer is found as a small erosion of the mucous membrane, not deep enough to hold a sufficient quantity of barium to cast a shadow projecting from the wall of the intestine. It is in these cases that our conclusions must be based on persistent irregularity in contour, which is very largely due to spasm; to pylorospasm which is present in almost every case; and to hyperperistalsis and rapid emptying of the stomach which are, as a rule, also present. In a small percentage of these small ulcers the spasm will be relaxed by belladonna but the hyperperistalsis and rapid emptying of the stomach will persist. A pressure tender point is of some value here but not of as much value as in diagnosing ulcer of the stomach, because the tenderness may be due to a diseased gall bladder. Quite frequently duodenal ulcers are large enough or cause spasm enough to delay the emptying of the stomach, and in case of marked hyperperistalsis and delay in motility of the stomach with positively no defect in the gastric contour a lesion in the duodenum should be strongly suspected, even though the contour of the cap is apparently normal. In cases of long duration causing obstruction the stomach may become hypotonic and dilated. By far the larger percentage of duodenal ulcers occur in the bulb, and those occurring in other portions, as a rule, cannot be positively diagnosed by X-Ray. The writers have never been able to positively diagnose one outside of the cap, though frequently we find evidence which leads us to suspect the condition. A positive diagnosis of duodenal ulcer should never be made until the patient has been examined while under the influence of belladonna. Adhesion of the bulb to some other structure often causes irregularity of contour and is sometimes a source of error, in diagnosis, but this error can, as a rule, be avoided by observing alteration in mobility. In a small percentage of cases both gastric ulcer and duodenal ulcer are observed in the same patient.

CONCLUSIONS

First: Although we do not wish it understood that we discount the value of other methods of arriving at a diagnosis, we do feel that

the X-Ray is the most reliable single method and the only one by which the ulcer can be definitely localized.

Second: The accuracy of this method depends directly upon the thoroughness and efficiency of the radiologist, since the fluoroscopic study made by the experienced radiologist is the most valuable part of the examination.

Third: If the first examination indicates an ulcer, a second examination made while the patient is under the influence of belladonna will add greatly to the percentage of correct diagnosis.

THE DIAGNOSIS AND POST-OPERATIVE TREATMENT OF PERFORATED GASTRIC AND DUODENAL ULCER

T. E. Wilkerson, B. S., M. D., Raleigh

When I decided to invite your attention to this particular phase of the subject under discussion, I did it knowing full well the enormous amount of work that has been done, and the large amount of literature that is available on the subject of ulcer of the stomach and duodenum, and just how little has been said with reference to perforated gastric and duodenal ulcer. I beg the opportunity here to express in a brief way my personal views with regard to surgical treatment of ulcer of the stomach and duodenum.

We all know that from the time Wolfler, on Sept. 27, 1881, at Vienna, did the first gastro-enterostomy for obstructive symptoms of the stomach, with excellent results, this procedure has gained momentum continuously, and the consensus of opinion of the leading surgeons up to a few years ago, and even now was toward gastro-enterostomy, either anterior or posterior, leaving the ulcer in the majority of cases as they found it. To my mind with the exception of select cases, this method has been unsound surgery from the beginning, and will continue to be so until it becomes obsolete or abandoned altogether. I am fully convinced that where there is no obstructive symptoms, sane surgery of the stomach and duodenum seldom requires a gastro-enterostomy. Excision of the ulcer with some form of a plastic operation on the pylorus, the latter depending on the seat of the ulcer, will leave the patient in less danger of future surgical interference and enhance his chance of regaining the proper physiological function of his foregut. I trust my views added to those already given will aid rather than hinder the right step to follow.

The subject of perforated ulcer of the stomach and duodenum embraces a few fundamental facts that are absolutely essential for the proper treatment of the condition. The two most important of these are first, a correct and immediate diagnosis; second, immediate and correct treatment, both operative and post-operative.

Diagnosis. Time does not permit in a paper of this kind of a detailed differential diagnosis between numerous conditions that

may occur in the abdomen, simulating in many respects the perforation of a gastric or duodenal ulcer, though it is well to bear in mind some of the difficulties one encounters in forming a correct opinion of this condition. In a large per cent of the cases the patient is in a state of shock when first seen by the surgeon, and has had large doses of opiates, making it at times very difficult to elicit the main facts upon which to base a clear, correct and immediate opinion. In the case of a perforation, a history of a long standing stomach ailment is at times obtainable, though this is not always so, for I have known a perforation of the duodenum to take place without any previous symptoms of any pathological condition existing in the stomach or duodenum; in most cases I have had, the perforation took place during the digestion of a hearty meal, judging from the amount of stomach contents and undigested food that had escaped through the opening. To me the most characteristic and helpful symptoms is the sudden onset and the type of pain, the pain that follows the perforation of an ulcer has in it a peculiar singularity that simulates no other form of pain. It is sudden, alarming to the patient, knifelike in character, and does not yield satisfactorily to large doses of opiates, but persists in increasing severity until the pain centers are depressed and the patient reaches a state of shock. The temperature and pulse vary at different intervals; at first the temperature may be subnormal and the pulse weak and rapid, but in a few hours the temperature rises to 99 or 100, and the pulse slows down to 80 or 90. Thus you will see, after the first immediate shock of the perforation, the temperature and pulse do not correspond to a septic peritonitis, but rather to those of acute toxemia. The abdominal muscles are on guard giving a boardlike rigidity, often more pronounced on the right side. When the ear is placed to the abdomen no sound is heard, peristalsis has ceased. The patient seeks the most comfortable position and is usually found with thighs flexed on the abdomen. Nausea is always present and associated at times with vomiting. The white cell count varies from twelve thousand to sixteen thousand. Urinalysis adds very little from the diagnostic standpoint, but should be done as a matter of determining the condition of the kidneys.

To briefly summarize: The sudden onset, the history of a gastric disorder, the board-like rigidity of the abdominal muscles, with the absence of peristalsis, the severe continuous pain that yields not to large doses of opiates, with a white cell count of from twelve thousand to sixteen thousand, the position of the patient, and the full slow characteristic pulse, should hasten the physician or surgeon to make up his mind that the condition is at least an emergency and requires immediate surgical intervention.

Before passing on to the post-operative management I would like to say a few words about the operative treatment. The results of the operative and post-operative treatment alike, will depend to a large extent upon the time that elapses between the perforation and the operation, for these cases in a few hours pass

from living pathology into post-mortem pathology; therefore, with an abdominal calamity of this kind it is imperative for the physician to make up his mind at the earliest possible moment.

There is no hard set rule to follow, but my experience has been that after fourteen or more hours have elapsed between the onset and operation, the results are not satisfactory, but if the operation is performed within the first ten hours the results are usually all that could be desired. The operation itself is one in which speed with thoroughness is certainly indicated. On opening the abdomen the seat of perforation is easily located by the escape of gastric or duodenal contents. The margin of the ulcer area should be excised, preferably with cautery; the closure of the opening thus made should be reinforced with a piece of omentum or adjacent layer of fat. The ulcer area and the subhepatic space should be drained with two or more cigarette drains. A large rubber tube should be placed in the bottom of the pelvis and brought out above the symphysis in the middle line to take care of the drainage of this area.

The post-operative treatment of perforated gastric or duodenal ulcer is to my belief the most important step, other things being equal, in the successful outcome of this condition. As far as I have been able to determine, the treatment should be practically the same, whether the perforation took place in the stomach or duodenum; of the two, a perforation of the stomach would probably require a more rigid post-operative regime, but it is better to err on the safe side and treat them both alike. In my own experience I have had the misfortune to lose several cases of this kind, due to the lack of knowledge in handling the cases after operation, and I have seen other cases die that had been operated on by experienced surgeons for the same lack of post-operative knowledge. Thus it seems to me from my own experience, association and observation of others, the tendency has been to follow too closely the same post-operative procedure in cases of this kind, with slight changes, that is carried out in other types of abdominal operation. To avoid a detailed discussion of these differences with your indulgence I will give the daily post-operative management of two cases for the first fifteen days after operation that were admitted to my service during the past year. The seat of perforation in each case was in the stomach near the pylorus; the time between the perforation and operation in one case was seventeen hours and the other fifteen hours, the treatment was practically the same in each case, the second being based on the first.

The patients were transferred from the operating room to a properly prepared ether bed, equipped with Fowler springs and immediately placed in a semi-sitting posture, preferably at an angle of seventy degrees. The following daily orders were copied from the chart.

FIRST DAY—Nothing by mouth. Murphy drip of glucose and soda bicarbonate solution per rectum. Hypodermoclysis of 350cc of normal saline

solution every four hours. Morphine sulphate grains ⅛ hypodermatically if necessary. Mouth wash every fourth hour.

SECOND DAY—Same as the first day.

THIRD DAY—Same as the second day except Murphy drip is changed to four hours on and four off.

FOURTH DAY—Same as third day.

FIFTH DAY—Same as fourth day with addition of small pieces of ice by mouth every fourth hour; simple enema.

SIXTH DAY—Same as fifth with addition of albumen, one dram every three hours; water, one dram every three hours. Alternating.

SEVENTH DAY—Same as sixth with increase of albumen to two drams, and water to two drams every three hours.

EIGHTH DAY—Same as seventh, with water and albumen increased to one half ounce each every three hours. Murphy drip and hypodermoclysis discontinued during nights.

NINTH DAY—Same as eighth day, with addition of mineral oil four drams three times a day.

TENTH DAY—Same as ninth with the following changes: albumen and water each, one ounce every three hours, ice cream one half ounce.

ELEVENTH DAY—Same as tenth with albumen and water increased to one and a half ounces every three hours, and one ounce of ice cream during the day.

TWELFTH DAY—The hypodermoclysis and Murphy drip were discontinued, the rest of the treatment the same as preceding day.

THIRTEENTH DAY—Albumen one and a half ounces, water one and half ounces every three hours; milk, two ounces during the day; boullion, two ounces during the day; one raw egg, ice cream one ounce.

FOURTEENTH DAY—Albumen two ounces every two hours, water two ounces every two hours, one raw egg, dextromaltose one dram with milk two ounces.

FIFTEENTH DAY—Albumen four ounces, water four ounces every three hours, dextromaltose two drams with three ounces of milk, one raw egg, one ounce ice cream.

This line of treatment was kept up with a gradual daily increase in amount of nourishment given until the twenty-first day, at which times semi-solid foods were added to the diet. The average stay in the hospital of each case was twenty-three days.

There are a few points in this post-operative management that I would like to emphasize: The patients were allowed to react in a semi-sitting position. Nothing was given by mouth until the fifth day. No purgatives were given during the patient's stay in the hospital. Evacuation of the bowels daily with simple enema after first day. Mineral oil was given three times a day after the ninth day. The Murphy drip and hypodermoclysis were kept up

until the twelfth day. Semi-solid foods were added to the diet on the twenty-first day.

DISCUSSION

Dr. L. A. Crowell, Lincolnton: This is truly a big subject, and it is a subject upon which we could talk from now until midnight, and then still have plenty to talk about. I can only hope, in a short discussion, to emphasize some of the points in the papers read. I remember last fall being at a symposium on this same subject at the Mayo Clinic, and I want to tell you that I am proud of North Carolina when I come back here and see that the symposium at that great clinic was not any better than this one here. In fact, I believe I have really gotten more out of this than I did out of that.

Now, I wish only to speak briefly of the acute perforated ulcers. In fourteen months' time we seem to have had an epidemic of perforated ulcers, for we have had seven in fourteen months, the last of which was about three months ago. Out of that seven, one died. That case came in about forty-eight hours after perforation, and died; the others all recovered. I know how important it is to make every effort to make a definite diagnosis in every case of perforated ulcer, but I do not see how any man could hope to make a perfect diagnosis in every case. In fact, I operated on several of my cases for an acute ruptured appendix, and, after getting inside, found I had a perforated ulcer of the stomach. There are a few ways, however, by which we may hope to make the diagnosis. The first is in getting a complete history of the case, which is most difficult, because of the acute pain from which the patient is suffering. If we have the symptoms of an acute abdomen, that is sufficient knowledge to justify an exploratory incision, whether it be due to acute appendix, acute gallbladder, or ruptured gastric ulcer. After we get in it is not always so easy to tell what we have, but there are several points which will help us to distinguish acute ulcer from acute appendix. The first is the character of the fluid we encounter. The fluid from appendix always has an odor, because of the presence of colon bacilli. The fluid from a ruptured gastric ulcer does not have any odor and is slimy in appearance. Another thing that is helpful is the bubbling of gas which you can see and hear when you open the wound. That has been a great help to me.

As Dr. Brenizer says, I do not believe that gastro-enterostomy is a thing that should be done in the presence of an acute ruptured gastric ulcer. I think it adds greatly to the mortality in those cases, which are already greatly shocked, and I think we should be content to close up the ulcer and leave the patient alone. I believe this is the proper course to pursue. I know that in advocating this I am differing from some of the great authors—Deaver, for instance, but Deaver might do it when I could not, so I satisfy myself with sewing up the ulcer and leaving the man alone.

The next question is the diet. I know some who advocate, following the operation, giving nothing by the mouth for twenty-four hours or even longer. That may work all right in some cases, but not in others. I remember one case of a woman with a ruptured gastric ulcer who had an exophthalmic goitre. She was running at a very high rate of speed. I woke up in the night, and something told me to go over and see her. This woman was lying there with a pulse of a hundred and fifty, begging for water, water, water. I saw that if she did not have water the boiler would blow up, so I gave her half a glass of water, and in an hour gave her another glass. In two hours her pulse came down, and I see now that if I had withheld water that woman would have died.

Dr. R. McBrayer, Shelby: I want to congratulate the chairmen who have gotten up this symposium, and also to deplore the fact that so few heard it. Certainly we are not diagnosing gastric ulcer early enough.

These cases, I think, should be followed up with the barium meals at monthly or two-monthly intervals after medical treatment, to see what is happening there, so far as the X-ray can demonstrate. Another point in deciding whether the patient should or should not be considered surgical: I go by this: If I can locate foci of infection outside of the abdominal cavity, as ears, tonsils, accessory sinuses, etc., I am more likely to advise that patient to take medical treatment than I am in cases where I can not find any foci of infection outside the abdominal cavity, for then I feel that the patient might get better by taking a look at the gall-bladder and appendix.

Another thing: if we put mercurochrome into a vein, why can't we put a little mercurochrome thru a stomach tube and apply it directly to the ulcer? Why can't we use the same germicide in the stomach that we use intravenously?

Dr. R. L. Pittman, Fayetteville: I am going to mention one drug that is as old, possibly, as any of us, but if you give it to any suspected case of ulcer of the stomach it will do no harm, and, if he has it, when you open the abdomen you will immediately know it. In a suspected case give tablet of methylene blue, dissolve it in a half glass of water, and give it to the patient. If there is a perforation you will at once recognize it when you open the abdomen. This will certainly do no harm. I have tried it in three cases.

Dr. Nisbet, closing the discussion: I think we can all see from this discussion of ulcer that the medical men and the surgical men are getting a little closer together. A few men dogmatically stating that ulcer treatment is either medical or surgical and not giving the other side a chance can do a lot of harm. If we can get together on these things I believe we shall make more progress.

In Dr. Brenizer's paper, as I understand it, he expresses the belief that we get only temporary improvement in these cases, and most of them come back later. Now, I do not ask you to take my word for it, but certainly, in the cases I have seen in the last five years, a good many of them are healed and are cured. It may be that they have gone to some one else, for you can not always tell about those things. But certainly when men of the type of Sippy and Smithies report large numbers of cases cured we can not dispute it.

As to ulcers becoming malignant, that can not be denied. At autopsy large numbers of ulcers are shown to have begun malignant degeneration. It would be interesting in these cases to know if these might not be cases where the treatment has been neglected, or which have not been properly treated. Where it is possible, the ulcer-bearing area should certainly be removed.

The use of atropine in the diagnosis I think can not be too greatly emphasized. I might say in a third to a half of all the cases we see when the pictures are first made we get a persistent irregularity in the pylorus or in the duodenal cap—I mean in the cases that might be suspected of ulcer we get these irregularities, and after putting them on atropin for three or four days, or tincture of belladonna for a week or two, and getting them to come back, the cap is perfectly smooth.

Dr. McBrayer mentioned the follow-up system. We believe all these cases should be followed from six to eight or twelve months, depending upon the condition of the case. When they come back an X-ray picture should be made, to see if the irregularity has cleared up, to see if the spasm or deformity has disappeared, and this should be compared with the previous picture.

Dr. Sparrow, closing the discussion: Regarding this healing of ulcers, I think Dr. Brenizer is perfectly willing to admit that acute ulcers do heal. He says very emphatically in this paper that he turns over all acute ulcers to the internist, except when accompanied by recurrent hemorrhage or perforation. In regard to the breaking down of the chronic ulcer, it is the carcinomatous degeneration and danger of perforation that leads him to the more radical procedure. A case came under our attention not long ago, in which the man gave symptoms two years ago of acute ulcer, at which time the X-ray study was negative entirely. The man was put on treatment going for two years in perfect comfort, apparently well. He suddenly, while at work, was seized with acute pain, and was brought in with the abdomen board-like in rigidity. That man had been under treatment for two years, and broke down with an acute perforation.

Dr. Phillips, closing the discussion: As I tried to emphasize in this paper, a large percentage of the ulcers both of the stomach and duodenal cap can be positively diagnosed by the X-ray, more especially in those cases in which we have the direct X-ray signs. I think it is very valuable for the gastro-enterologist, the surgeon, the internist

and the radiologist to have a consultation. I think it will help us greatly to consult with one another. Let the surgeon, gastro-enterologist, internist, or whoever refers the case to the radiologist get the radiologist's viewpoint, and let the radiologist get the other fellow's viewpoint.

As to ulcers becoming malignant, frankly, I do not know positively about that; I do not know how often simple ulcer undergoes carcinomatous degeneration. Some claim that it is a very rare occurrence; others claim it is of very frequent occurrence. Dr. Carman, of the Mayo Clinic, has been one of the foremost advocates of the theory that it is of very frequent occurrence.

It has been my privilege to observe a large number of ulcers as to diagnosis, to observe them from the X-ray standpoint during the time they are under medical treatment, and for a long period in a number of cases after the active treatment has been stopped. It is my feeling that if the X-ray examination can be relied upon, if negative examination can be relied on at all in these cases, a very large percentage of ulcers, both of stomach and duodenum, do heal under medical treatment and remain healed for a long time. I have observed some of these cases for a period of three or four years.

Not being a surgeon, and knowing very little about the technic of gastro-enterostomy, I hesitate to discuss it from the surgeon's viewpoint, but I would like to say this. We see a large number of patients who have had gastro-enterostomy, more especially for the relief of duodenal ulcer. We see these patients from two to four years after they have undergone the operation, they being sent in to us for examination, giving definite symptoms of ulcer. In only a few cases are we able to demonstrate positively the ulcer in the stomach. We find various suspicious evidences of ulcer here. There is a large number of these cases in which the stomach empties through the normal channel, and we find no evidence of ulcer in the duodenal cap, proving conclusively to me that these ulcers heal after a gastro-enterostomy, but in three or four years a large percentage of these patients are going to come back to us with an ulcer, or some condition which very closely resembles an ulcer, at the site of the gastro-enterostomy.

Dr. Wilkerson, closing the discussion: I am very much pleased to hear Dr. Phillips bring out that point. Patients who have been subjected to gastro-enterostomy do have a good deal of future trouble. My feeling is that at some time in the future, when we know more about surgery, gastro-enterostomy, except, as I said in my paper, in some form of obstruction, will practically be abolished.

Dr. Crowell's remarks about a patient with a pulse of a hundred and fifty reminds me of the first case of ruptured ulcer of the stomach I ever diagnosed. The patient came in about three o'clock in the morning, with terrible pain in the stomach. I realized that he had a serious condition in the abdominal cavity and called

the chief. The chief operated immediately. The next day, and for twenty-four hours after operation the fellow was rather sick. He was a catholic, and asked to have the father come. The priest went around behind the screen, and the fellow drank the pitcher of holy water. So, Dr. Crowell's story about giving his patient water seems to bear out Dr. Deaver's remark, "If you cut well and sew well, the patient will get well." So if you make the suture line absolutely water-tight, it will not do any harm. I possibly err on the other side, as I do not give anything by mouth until the fifth day, then give gradually increasing amounts until the fifteenth day.

SECTION ON CHEMISTRY, MATERIA MEDICA AND THERAPEUTICS

W. T. Rainey, M. D., Chairman, Fayetteville

SOME SALIENT POINTS in DIGITALIS THERAPY

W. T. Rainey, M. D., Fayetteville

It is not my purpose in this discussion to offer anything new in digitalis therapy but to stress again some important points in its administration, the disregard of which is often the cause of failure in obtaining improvement in heart cases under digitalis. We see these cases improve in the hospital when possibly the same treatment at home has not produced the desired effect. It is true that the diet, rest and general supervision of the patient can better be controlled in an institution than at home, but these alone cannot account for the improvement. The failure usually lies in insufficient dosage. Often the preparation used is a poor one, but more often the amount given is small and dosage is not pushed to the point of tolerance, as should be done unless a definite effect is produced sooner.

Digitalis should be given in weighed or measured amount, not by drops, and enough should be given of a reliable preparation to produce a definite effect at least within four days. Usually an effect is noted to begin in about half this time. The drug rarely slows the pulse until mild toxic symptoms are produced, even though other striking changes are noted and the patient benefited when the pulse rate is not changed. After digitalization occurs the drug should be stopped for a few days and then started in half the amount of the original dose, the idea being to maintain the ventricular rate under which the patient does best, which usually varies from seventy to eighty. The dosage is varied to meet this requirement. After a time the patient learns the effect of digitalis and will often start and stop it himself according to his symptoms. It should be a routine custom to instruct the patient to obtain a minim graduate at the time digitalis is ordered and make sure that it is used. The drop method is inaccurate and varies according to the size of the opening of the dropper and the position in which it is held in dropping the drug, whether perpendicular, horizontal, or an angle between the two. A dram (sixty minims) of the drug averages about 140 drops, so that when twenty minims is ordered and the dropper used the patient really obtains about 8.5 minims, or a dosage which would account for many of the failures in digitalis therapy.

While the patient is taking large doses of digitalis he should be seen daily and observed closely for the early signs of poisoning. The outstanding features in digitalis poisoning are well known and are sufficiently unpleasant to make it most desirable to stop the drug before they appear. Preceding the vomiting about twenty-four

hours can be noted a curious mental depression which comes upon the patient, perhaps accompanied by headache and, what is more important, a sudden loss of appetite. If the drug is stopped when these appear the distressing nausea and vomiting can usually be prevented. The pulse rate, *per se,* cannot be relied upon as an indication of improvement but should be checked by counting the ventricular contractions. If a nurse is in attendance she can be taught to use the stethoscope and make a record of the ventricular rate at the time the pulse is counted. In the beginning, due to weak ventricular contractions, probably one-third of these will not be felt at the wrist and the difference in the two will be quite marked. As improvement increases the difference decreases until the two rates finally coincide. In those cases which do not become digitalized and the ventricular and pulse rate equal or nearly so, the prognosis is invariably bad.

The indications and contra-indications for the use of digitalis would not fall within the scope of this paper. The drug should be given with a definite idea in view, the digitalization of the patient, and these rules apply whether it is administered so as to attain this point in twenty-four hours or four or five days.

In conclusion let me enumerate them again: That digitalis be pushed to a point of mild toxemia unless the desired effect is obtained before. That the patient be observed closely for the earliest signs of saturation and the drug stopped before the appearance of the distressing symptoms of poisoning. That the ventricular rate be watched as closely as the pulse rate, and that a good preparation be given in weighed or measured amounts.

The faithful observance of these rules will be a means of helping these patients and lessening the number of failures in digitalis therapy.

DISCUSSION

Dr. William Allan, Charlotte: I think nothing can be more important than what Dr. Rainey has just said about the dose. My own practice is to measure out a tablespoon and give it. I agree with him entirely that the thing to do is to push it until you get toxic symptoms. My own observation is that the vomiting from digitalis does not hurt anyone, and it is best to give it until the patient vomits.

Dr. F. R. Taylor, High Point: I believe that I have not anything to add to the discussion except this—I very often, in teaching the nurses at our hospital, get a minim glass and two or three droppers of various sizes and have been able to demonstrate this: with tincture of digitalis, dropping the drug out of the bottle I have sometimes been able to get a dram with forty-five drops, while with some of the so-called standard droppers it sometimes takes one hundred and eighty drops to make a dram. So the variation is in the neighborhood of four hundred per cent.

I had an experience once after the Southern Medical meeting in Asheville. Canby Robinson was up there talking about massive

doses of digitalis, giving half an ounce in the vein at one dose, but not repeating in less than a week's time. I came back and thought it over, wondering if I would give it to anybody. Fortunately for me, the first patient was an old man with slight decompensation of the heart, slight discomfort on going up stairs. So I started in with small doses three times a day. He was not a bed patient; could not be made to go to bed, though I knew he should be there. His pulse rate and ventricular rate were the same, around a hundred, if I remember rightly. He took that only one day and his pulse rate dropped to 58. I went to the drug store where his prescription had been filled, and inquired what preparation of digitalis had been used. They told me it was Sharp & Dohme's fat-free tincture, and I thought I had solved the digitalis problem. The next patient had auricular fibrillation and I put him in the hospital. His pulse rate went down shortly. The next patient to whom I gave it, specifying Sharp & Dohme's fat-free tincture, I might have given as much water, so I do not know anything more about digitalis than I did then.

Dr. N. P. Boddie, Durham: It has been my experience with digitalis that it varies very much, and most of the tinctures seem to be absolutely inert. The greatest trouble I have had in giving digitalis is the nausea it causes. It is hard to get along with a patient who is nauseated by the medicine he takes. The best results I have gotten are from powdered digitalis. If I give a liquid I usually use the fluid extract. If you get the fluid extract from a reliable firm you generally get results if you continue it long enough. I have always been afraid of giving these big doses. I had a patient once, a little fellow with scarlet fever, with kidney complications, to whom I was giving full doses. He died very suddenly, and I have been very cautious about giving big doses since.

Dr. I. P. Battle, Rocky Mount: Several years ago I spent a little time in Massachusetts General Hospital in Boston, and they were using single doses of slightly over five drams in emergency cases, with practical suppression of urine, some of them unconscious. But they were not using any such doses in the dispensary, with outdoor patients, and did not advise it, because they felt they were not in contact with them enough to watch the thing. That would correspond to our general practice in the average home.

Dr. A. B. McCreary, Raleigh: I have no discussion, but thought I would cite a little instance. You who have attended the Southern Medical and are familiar with Dr. Frank Jones, of Memphis, now dead, recall his bitter opposition to digitalis. When I was an intern he talked strongly against digitalis for cardiac disease. While an intern in Memphis I put some of these decompensated heart cases to bed, gave some morphine and some digitalis, and found that I did get just about as good results from the rest and morphine as from the digitalis.

Dr. Rainey, closing the discussion: I have enjoyed the discussion very much. Personally I like the powdered digitalis, but in discussing it I wanted to bring out the fluid preparations.

As Dr. Taylor said, in demonstrating to his nurses, the drop all depends upon the position in which the dropper is held. Most people hold the dropper almost vertical in dropping medicine.

When patients get better after being in the hospital, upon the same treatment as at home, we presume the cause must have been insufficient dosage.

THE USE OF MERCURY IN THE TREATMENT OF SYPHILIS.

K. B. Geddie, M. D., Raeford

In the use of mercury against syphilis we have probably the most ancient present-day therapeutic procedure, this drug having been used for this purpose almost continuously since 3000 years B. C. From time to time, for one reason or another, it has fallen into disrepute, the last time being simultaneous with the introduction of salvarsan, which was heralded as a panacea that was to cure all cases of syphilis with one injection. That was and still is our ideal, but, in reality it was far from true. We all know how far from ideal are all our present-day anti-syphilitic procedures.

Although an enormous amount of research work has been done on the pharmacology of mercury, and in spite of the fact that its use has stood the test of time and the soundest clinical judgment, we have no definite pharmacologic basis for its use. Spirochetes grow readily in mercurial solutions of much higher concentration than are ever obtained in the blood stream of a treated patient. Mercury is not spirochetocidal to the same degree as arsphenamin. In spite of this fact, many prominent syphilologists consider that our one most efficient agent in the treatment of syphilis is mercury.

There are four common methods of administering mercury, namely: Ingestion, inunction, intra-muscularly, and intravenously. It can be given by mouth, and is commonly but should rarely be done as this is a notoriously inefficient method of administering mercury. Inunctions are an efficient but slow method. The excretion curve is slow to rise, but can be kept fairly constant once established. Extremely few patients can be depended upon to use this method properly and over a sufficiently long period of time, and it is impracticable on this account. Intravenous injection is quite popular among the French clinicians and is fast becoming more so among American syphilologists. This method has the advantage of being painless and of giving almost instantaneous mercurial effect. Its disadvantages are the danger of embolism, obliteration of the vein, and the fact that it is quite rapidly eliminated, thereby necessitating frequent treatments (24 to 48 hours). Probably the most accurate, effective, and generally satisfactory method is by the intramuscular injection of the salicylate suspended in

animal or vegetable oil. Many other mercurial preparations can be and are given in this manner, but as a rule are either less effective or more dangerous, or both. When the salicylate is given deeply in the gluteal muscles, it is estimated that four-fifths of it is absorbed in four days and all of it in ten. The excretion curve rises quickly. It is moderately quickly eliminated, thus removing the danger so pregnant in gray oil or calomel—that of sudden massive absorption following trauma, and chronic mercurialism, either of which may occur weeks or months after the last injection of gray oil or calomel. These two very real dangers can be practically eliminated by omitting gray oil and calomel from our anti-syphilitic armamentarium.

The supremacy of the arsphenamins in the treatment of syphilis is generally acknowledged, but when almost every day brings the complaint of uncured cases or presistent Wassermann reactions after supposedly thorough courses of treatment, it becomes more and more evident that some form of mercury is necessary to effect a cure. While almost all clinicians agree on this point, very few agree as to the preparation which is best. This very lack of agreement emphasizes the fact that so far we have not discovered the perfect mercurial for anti-syphilitic use. The compounds of mercury commonly used intravenously are limited in value by comparatively high toxicity or local corrosive action. In an attempt to develop a compound of low toxicity, absence of local irritating properties, and of therapeutic value, White, Hill, Moore, and Young of Baltimore introduced Flumerin, an organic mercurial preparation for intravenous use, stating that they did not believe this or any other mercurial so far developed could supplant the arsphenamins, but adding at the conclusion of their laboratory and clinical study, that it was their "clinical impression that flumerin is, from the standpoint of toxicity and therapeutic activity, superior to the soluble mercurial salts in general use by the intravenous route." This point was definitely proven by a series of experiments carried on by Hill to test the efficiency of flumerin and mercuric cyanid intravenously, red mercuric iodid and mercuric iodid and mercuric salicylate intramuscularly. The method used was briefly as follows: An emulsion of a popliteal node of a known syphilitic rabbit was injected into the testicle of a healthy rabbit. In fifteen to thirty-one days a primary lesion always developed. Treatment was begun after the lesion was fully developed. After the series of injections which comprise the treatment has been given, these rabbits with cured lesions were held for observation about fifty days to see that no lesions recurred. If no relapse occurred, popliteal node transfers were again made into the testicle of a healthy rabbit. If this transfer animal remained without a lesion during the ninety days of observation, it was concluded that the anti-syphilitic action of the drug had been sufficient to drive the spirochetes from the popliteal node of the treated animal, from where Pearce and Brown have shown that they may be recovered regularly in untreated rabbits. Fifteen daily doses of flumerin were given. Seven of the eight lesions resolved. Twenty-one doses of the cyanid gave poor results. One of four lesions resolved. Twenty-five doses of red mercuric

iodid intra-muscularly gave results slowly. Each case resolved, but subsequently three of the four cases relapsed. Twelve doses of mercuric salicylate were given. During the first six weeks of treatment insufficient quantity was absorbed to check the spread of the infection. These results would seem, since flumerin is so much more effective experimentally than the other mercurials, to warrant its extended trial in clinical syphilis. Only by its use over a long period of time, in all stages and forms of syphilis, can its comparative value be determined, but when such an authority as Hugh Young uses this drug in his private practice we may rest assured that, in his opinion at least, it is the most potent mercurial preparation for anti-syphilitic use. Following the laboratory experiments, Moore and Wassermann studied the effect of flumerin in 117 cases of clinical syphilis. From their results they reached the following conclusions: "A study of the cases with early syphilis indicates that flumerin has spirochetocidal properties to an extent not shown by other commonly used mercurial drugs. It heals the lesions of early syphilis with a fair degree of constancy and rapidity, exercising less effect than the arsphenamins especially on mucous patches; and it exerts a powerful influence on the blood Wassermann reaction." The results in tertiary syphilis may be summed up in the statement that "Resolution of lesions was usually accomplished and in some instances a definite effect on the blood Wassermann was noted. These results are not as rapidly obtained as with the arsphenamins, but seem equal to and better than the results from other mercurial drugs." In addition, it was well tolerated by patients intolerant to arsphenamin or to other mercurials. To properly evaluate the worth of flumerin in this series of cases no other drug was used. However, the authors do not recommend it to be given alone. They suggest the usual course of six to eight injections of arsphenamin followed by twelve to sixteen injections of flumerin every other day (0.5 mg. per kg. of body weight), this course to be used alternately until the Wassermann becomes negative and remains so. This plan would require necessarily the expenditure of much time and incidentally money, but in early syphilis the advantages would seem to outweigh the disadvantages. Such would not be the case in late syphilis, when the time element is not so dominantly important. Another great disadvantage it has is the fact that it must be given intravenously.

There are certain dangers in administering mercury to a luetic patient. These can be roughly classified under three heads, acute, chronic, and indirect. The acute poisoning is quite rare except when caused by large doses of a soluble salt taken by mouth or intravenously. Chronic mercurilism, with the usual symptoms of enteritis, ptalyism and gingivitis, is largely traceable to the administration of calomel or gray oil intramuscularly. This particular danger can be eliminated to a great extent by careful attention to the condition of the teeth and gums before and during treatment. The indirect poisoning is caused largely by kidney damage. According to McFarland, of the Mayo Clinic, this has been greatly overestimated. At the same time, though, MacNider has quite definitely

shown that large doses do have a deleterious effect on normal kidneys of various laboratory animals and that even small doses have a distinct effect on previously damaged kidneys. Frequent urinalyses are necessary to prevent serious kidney damage in patients intensively treated with mercury.

ARSENICAL POISONING FROM NEO-ARSPHENAMIN WITH CASE REPORT

J. F. Nash, M. D., St. Paul

The general and commendable use of arsenical preparations in the presence of the chief of the venereal triad occasionally and unfortunately leads to untoward and unforeseen accident. Several months ago the Public Health Service sent out a caution about the use of neo-arsphenamin, and a realization of the appropriateness of this caution prompts the report of the following case.

Mrs. B, a white widow, aged 42, and by occupation a textile operative.

Her family history was unimportant—she had four living, healthy children and one son dead in the service of his country in France. There was no history of any venereal disease, or symptoms of such—no abortions. She had had typhoid and the diseases of childhood.

Presenting herself for treatment, she complained of a sore tongue of three months, and a severe headache of two weeks duration. She was a small, fairly well nourished woman of good color.

Inspection of the tongue showed on the tip a circular ulcer one centimeter in diameter with marked induration of one centimeter all around the periphery —a typical chancre of several weeks duration. (It was learned later that this oral initial lesion was contracted from drinking from a dipper at an infected neighbor's home.) There were numerous mucous patches in the mouth, and papular eruption of the face and body—an unmistakable secondary manifestation.

Her blood pressure was systolic 120 and diastolic 80 millimeters, urine normal, hemoglobin 80%. Awaiting a Wassermann report Mrs. B. was given Protiodide and instructed to return in a week, at which time the blood report was four plus, and the patient was showing some improvement in the eruption and in the extra-genital tongue lesion.

Being indigent she was assigned to the Robeson Venereal Clinic and neo-arsphemanin treatment instituted. (A standard brand supplied by the State Board of Health was used.) On account of her small size but .4 grams was given as an initial dose; in one week .6 grams, and two weeks later .9 grams was administered. There was no chill or other reaction from any treatment, but there was wonderful improvement in the oral and dermal symptoms of the disease—the mucous patches, chancre, and skin eruption were entirely cleared up, and the headaches were gone. After another week's interval a fourth dose of .9 grams was given.

On the day following this fourth injection she was suffering with severe abdominal cramps, mild diarrhea and nausea, and a temperature of 100. Day after the abdominal pains and diarrhea grew progressively worse, and massive doses of morphia seemed to give but a semblance of relief. There appeared edema of the eyelids, and a general macular rash. All the mucous membranes were irritated and injected—the mouth and throat as violent a red as in any case of scarlet fever. The thirst was excessive—on account of the severe gastro-enteritis and inability to retain any liquids.

The stools—20 to 30 daily and rice-water in character at first—became bloody.(The urine was scanty and of a specific gravity of 1035 to 1040. Albuminuria appeared, and shortly hematuria. The edema became general, and the rash very marked, similar to that of a frank scarlet fever.

After ten days of suffering and marked prostration, there was slight improvement in the cramps, the vomiting grew less, the edema subsided, and the stools were about ten daily. Less morphia was required for her comfort. Small areas of anesthesia appeared on her limbs. Exfoliation and desquamation of the skin took place. The pulse range during her illness was 80 to 120; temperature never over 101 and frequently 98; respiration 20 to 30. Hopes were entertained that she would survive the arsenical poisoning.

On the twenty-eighth day of her illness she suddenly went into syncope and died, probably of a myocardial degeneration.

Recent investigators of post-arsphenamin toxemias are recommending the intravenous use of sodium thio-sulphate as a detoxifying agent.

The interesting features of this case are the extra-genital initial lesion and the fatal termination from so relatively small an amount of the drug (but 2.8 grams over a four week period) there being evidently an idiosyncrasy for arsenic.

The conclusions reached are that owing to the wide incidence of syphilis, the general practitioner must necessarily treat some cases, and that the neo-preparations are the most practicable; that a drug given intravenously cannot be recalled, and one should be constantly on the alert for evidences of poisoning.

DISCUSSION

Dr. Frederick R. Taylor, High Point: I think it is a good thing to have a sort of experience meeting on these things once in a while. I had a case a few years ago that gave me a good deal of food for thought. A young girl came up with a typical chancre on the hip. I sent her over to Dr. Keiger at Greensboro for a dark field and he returned a positive report. I gave her .6 gram of neo-arsphenamin, intending, if she stood it all right, to give her .9 next time. A few days later she sent for me with a terrible sore throat. I took her to the hospital, and a day or two later she almost overwhelmed me by breaking out with a typical scarlatinal eruption. I examined her thoroughly from every angle. The next day the eruption was entirely gone, and two or three days later she left the hospital. About a week later she developed an intense jaundice. Fortunately she

recovered, but it took about three weeks to get over that jaundice. That was the first and last dose of arsphenamin she had. Fortunately, getting the treatment early, she has since shown a persistent negative Wassermann. Another interesting feature to me was that she received what I still believe to be the least toxic and, from every standpoint, the best preparation of neo-arsphenamin that I know of—that put out by the Dermatological Research Laboratories. I personally know Dr. Kolmer, of the Dermatological Research Laboratories, and his observations make me feel that it is the best preparation to use. It is highly endorsed by the U. S. Public Health Service. I feel very fortunate in not losing that patient, though I claim no credit for it.

Dr. Geddie, closing the discussion: I thank the gentlemen for the discussion. In the paper I realized the impracticability of the administration of mercury by inunction, which is the way most of us administer it, I imagine. It is the commonest way. It is very unfortunate that patients will not use it correctly and use it over a sufficiently long period of time to get results. That is the way most of us have to use it, because, say what we will, the other is too expensive. The average patient is not able to take the time or pay the money necessary for intravenous injection of mercury sufficient to get therapeutic results.

Dr. Nash, closing the discussion: I have nothing to add except that we never know when we shall have these experiences until we get into them.

THE ETIOLOGY OF HABIT DISEASE

W. C. Ashworth, M. D., Greensboro

The assertion that inebriety and morphinism are always voluntary vices, or moral disorders, and that the disease theory is untrue, materialistic and unsound, is urged by persons with little practical knowledge of the subject.

It is a significant fact that the theory that inebriety is a disease was advanced and defended in many scientific circles by many very eminent physicians long before insanity was considered anything more than spiritual madness or a possession of the devil. In the second century of the Christian era, however inebriety was believed to be a disease, while insanity was thought to be a possession of evil spirits. During the last half of the century the disease theory of inebriety has been urged and denied with great intensity, and, in the sharp reaction of extravagant incredulity, quack specifics and "gold cures" were advocated, but now the subject is coming up to the level of exact study and scientific inquiry.

The fundamental causes of habit disease may be denominated as endogenous and exogenous, or in other words, hereditary or acquired. I am mindful of the fact, however, that the etiology is so

obscure in a large number of cases that it is well nigh impossible to designate any particular cause.

It is a common observation that many persons with a highly developed nervous system, living a life of great stress and strain, after some particular shock or disease begin to use whiskey to excess, resulting in moral palsy and a general failure of the ethical recognition of duty, obligation and consciousness of right and wrong. It is also noticeable at this time that delusional conditions and perversions of reasoning are early symptoms, and with these are associated marked defects of character, etc.

We usually recognize two prominent causes of inebriety; First, one of general physical and psychical exhaustion that has preceded and follows the use of whiskey, or some distinct constitutional degeneration or defect due to heredity, or to physical and psychical causes existing long before the use of whiskey.

We all recognize that poor nutrition and exhaustion from unhygienic methods of living is a prolific cause of alcoholism. We also recognize that many alcoholic cases have been burdened with care, which acts as a predisposing cause to the formation and continuation of the habit.

Ambitious men and women who are straining every nerve to attain their desire, also the avaricious class, who are struggling to accumulate money, etc., contribute a large per cent to the horde of alcoholic debauchees.

We also recognize the class of alcoholics who suffer from idleness and resulting hyper-nutrition on account of lack of exercise, and develop a toxemic state which often constitutes a craving for artificial stimulation.

I might also mention occupations that require incessant readjustment for the individual to accommodate himself to new conditions as a very common cause of alcoholism.

We are mindful of habit disease that is due to physical infirmities, especially infirmities that are accompanied by acute pain, etc. The morphine-habit disease is, of course, most usually encountered when pain is a dominant symptom in the case. I have known, however, a number of alcoholic cases which could be traced directly to chronic stomach disease and other painful maladies, owing to the fact that alcohol has a decided anesthetic effect on the mucous membrane in particular. We are cognizant of the fact that alcohol is frequently sought for the relief of neuritic pains, particularly those that are associated with chronic neuralgia, etc. It is almost a universal belief among the laity that alcohol in some form is almost a specific for the simple but painful neuralgia denominated as "toothache." The nerve pains of chronic malaria and other maladies are also temporarily ameliorated by the use of alcohol.

The most frequent cause of habit disease, however, in the judgment of the writer, is the environmental condition of the user. It has been my observation that the excessive use of whiskey can very

frequently be traced to desire, on the part of the user, to escape the unpleasant exigencies of life. In other words, the life situation of the individual is a primary factor in the causation of alcoholism. If life flows on "like a song" and the individual is able to escape the stress and strain that so frequently come in rapid succession, I have noticed a corresponding decrease in the amount of alcohol consumed.

I think that I am within the domain of my professional opinion when I express my belief that inebriety is in reality, in the majority of cases, a form of cowardice. To illustrate, when the individual is physically and mentally capable of solving the bread-and-butter question and meeting the disappointments of life without feeling the stress and strain, alcohol to this individual is seldom a consideration. If, on the other hand, a person is poorly equipped, mentally and physically, to overcome the stress and strain of life we find that more whiskey is consumed in order that the individual may be better able, in his opinion at least, to follow the line of least resistance. We must not, of course, lose sight of the fact that neurotic individuals desire a certain amount of oblivion, and, therefore, seek some narcotic drug or stimulant to lessen the poignancy of their situation, which, to them, is most unpleasant.

It is obviously impossible to enumerate the various excuses offered by the alcoholic or narcotic drug patient for the formation and continuation of habit disease. We shall be more tolerant, however, when we take into consideration that not only the habit of the patient, but also heredity, plays a very significant role in the ultimate termination of the disease. I, of course, do not believe that habit disease is inherited *per se,* but we all would admit that the person who is born into the world with an unstable nervous system is in far more danger of acquiring habit disease than the person who can boast of a phlegmatic temperament as a heritage from sturdy ancestors from time immemorial. We must, also, give due consideration to the age in which we are living, since it is granted by most of us that the problems of life are more complex, especially as to the solution of the problem of living and its attendant requirements, in every direction.

It would be signally unfair for us to overlook the fact that we are dealing with a large number of neuropaths and psychopaths, who are unduly susceptible to artificial stimulation of every description. It is well known to all of us that the mental instability of the congenital neuropath and psychopath is greatly accentuated by the use of alcoholic and drug stimulation.

I am not a fanatic on the subject of alcoholic and drug stimulation, but I must confess that a large per cent of my patients who manifest failing mentalities give a history of excessive alcoholic or narcotic drug stimulation. It is manifestly impossible for the neurotic to use even a small quantity of alcohol or narcotic drug without detrimental effects to the health and well being of the user.

I am fully aware of the fact that certain individuals seem to have a certain amount of what we may term actual immunity to the

usual effects of alcohol and narcotic drugs, but I am more and more convinced that these individuals are greatly the exception, and, on close observation, find they cannot, with impunity, resort to the "cups" or seek the euphoria of narcotic drugs. The pleasurable stimulation ascribed to the use of alcohol, and the more subtle narcotic drug, is usually *pari passu* with the duration of the bibulous habits of the individual and the artificial stimulation of the more seductive drugs.

With enforcement of the rather drastic prohibition and narcotic drug laws, at the present time we naturally expect a diminution in the patients suffering from habit disease. The salutary effect, however, of the enactment and enforcement of laws for the purpose of controlling the appetites or cravings of the human race has not made any appreciable change in the number of patients who are seeking treatment for habit disease.

I have been especially impressed recently with the fact that a large number of my patients suffering from alcoholic disease are also suffering from marked deterioration—both mentally and physically. The deplorable condition of a large number of these patients is due largely to the quality of whiskey rather than the quantity consumed. It is pitiable in the extreme to note the number of cases of mental disease, which is so often engrafted upon what was in reality primarily only a habit disease. Of course, it is impossible to dissociate, or find the line of demarcation, in a large number of patients who are suffering directly from habit disease plus certain mental deterioration, which, of course, must be differentiated from the original habit disease.

We are living in an age when life extension is being carefully considered, especially by our life insurance companies, who are giving the insured the advantage of the most scientific study for the purpose of promoting longevity. The habits of the would-be insured are carefully analyzed and no investigation is spared that will tend to enable the idividual to live out his full three score and ten years.

DISCUSSION

Dr. George W. Mitchell, Wilson: I think the Doctor has left out one of the greatest contributing sources we have to the narcotic problem, and that is the doctors themselves. Doctors go ahead and give a lot of morphine and other things to ease pain, without finding out the cause. Take the hospitals, too; morphine is too easily given by nurses and other attendants to ease pain, and we have a lot of dope fiends coming out. I believe the time is coming when doctors will be more careful about giving any kind of opiate. That has been the trouble with too many of our doctors; we are called into a home the first time, the patient complains of pain, and we shoot a hypodermic of morphine or some other drug into the patient and go on about our business. I think a doctor should be very careful about giving any kind of dope to alcoholics. Very often they drink a lot of alcohol and then call for the doctor to give them a shot to get

them off the drunk. I believe that is a case where a doctor should never give a hypodermic, that is to aid a man in getting off a drunk. These cases very often become addicts to both alcohol and opiates.

Dr. Ashworth, closing the discussion: I wish to stress particularly the easy transition from whiskey to morphine. At least eighty-five per cent of my male patients give a history of excessive whiskey drinking. They find out the wonderful effect of morphine, its stimulating effect, and then they go to the doctor time after time to get a hypodermic and get into the habit. The surgeon, I think, is usually very careful, but very often, with neurotic patients, they demand something to make them comfortable, and then we can trace the drug habit back to the time of the surgical operation.

THE SHAME OF MODERN MEDICINE: GETTING OUR POST-GRADUATE EDUCATION IN PHARMACOLOGY AND THERAPEUTICS FROM THE PROPAGANDA OF THE PROPRIETARY DRUG HOUSES

A PLEA FOR A MORE GENERAL STUDY OF THE FUNDAMENTAL PRINCIPLES OF THESE SCIENCES BY THE MEMBERS OF THE MEDICAL PROFESSION

Frederick R. Taylor, B. S., M. D., High Point

I wish to take for the text of this paper a passage from Osler's chapter on The Treatment of Disease in the Oxford Medicine, vol. I, pp. 702-3. It runs as follows:

"Each generation has its therapeutic vagaries, the outcome, as a rule, of attempts to put prematurely into practice theoretical conceptions of disease. *As members of a free profession we are expected to do our own thinking*; and yet the literature that comes to us daily indicates a thraldom not less dangerous than the polypharmacy from which we are escaping. I allude to the specious and seductive reports sent out by the pharmaceutical houses, large and small. We owe a deep debt to the manufacturing pharmacist, who has given us pleasant and potent medicines in the place of nauseous and weak mixtures; and such firms as Parke, Davis, and Co., of the United States, and Burroughs and Wellcome of England, have been pioneers in the science of pharmacology. But even the best are not guiltless of exploiting in the profession the products of a pseudoscience." Osler then goes on to give three items in which the manufacturing drug houses have gone too far: first, in pushing organotherapy beyond a sound scientific basis; second, in overpraising their products; and third, in usurping the functions of the teachers of pharmacology in the schools. He closes his paragraph with these significant words:

"For years the profession has been exploited in this way, until the evil has become unbearable, and *we need as active a crusade against pseudoscience in the profession as has been waged of late against the use of quack medicines by the public.* We have been altogether too submissive, and have gradually allowed those who should be our willing helpers to dictate terms and play the role of masters. Far too large a section of the treatment of disease is today controlled by the big manufacturing pharmacists, who have enslaved us in a plausible pseudoscience. The remedy is obvious: Give our students a first hand acquaintance with disease, and give them a thorough practical knowledge of the great drugs, and we will send out independent, clear-headed, cautious practitioners who will do their own thinking and be no longer at the mercy of a meretricious literature which has sapped our independence."

Who are, or ought to be, our students? *Every last one of us.*

A rather amusing incident occurred to me in 1919. I had graduated in medicine some six years previously. I was sitting in a reception room shared by Dr. D. A. Stanton and myself, reading a book. A man came in to see Dr. Stanton, who happened to be out at the time, so he sat down to wait, and something like the following dialogue ensued:

Man, rather patronizingly: "You are a medical student?"

Answer: "Yes, Sir."

Man: "Reading medicine in Dr. Stanton's office, I suppose?"

A: "Yes, Sir."

The conversation then drifted into other channels. In a few moments another physician came in and spoke to me in such a way that it was obvious to the man with whom I had been conversing that I, too, was practicing medicine. He then remarked:

"Oh, are you a doctor?"

A: "Yes, Sir."

Man: "But I thought you said that you were a medical student!"

A: "I did, Sir, for I am, and I intend to remain one as long as I practice medicine."

At this point Dr. Stanton came in and the conversation ended.

Dr. Alfred Stengel has put this same idea into a forceful simile. He has said that a man who gets a splendid undergraduate medical training and goes into practice and ceases to study is just like a man who deposits a large sum of money in the bank and keeps drawing it out without ever depositing any more. Some day he will find himself bankrupt. The physician's education is his capital, and he cannot afford to become intellectually bankrupt.

The routine of a busy practice makes any study difficult, and all of us unavoidably miss a lot of good things, but there is a special danger in failing to keep in touch with the fundamental advances in pharmacology and therapeutics, and that is that we shall be swept away by the confusing mass of propaganda, good, bad, and indifferent, and, as Osler says, be enslaved thereby.

How is this brought about? In a number of ways. In the first place, by the operation of the psychological principle of the summation of stimuli. Let me illustrate. We are walking in the business district of a great city. A newsboy cries his paper. We do not want a paper, as we are too busy to read it, and we are not feeling in a particularly philanthropic mood towards newsboys at that moment. We do not buy. We walk ten blocks and encounter ten newsboys. We buy from the tenth, simply because the summation of stimuli to buy has reached the point where it has broken down our resistance. So it is only too often with regard to the propaganda of the proprietary drug houses. Daily detail men, plus a daily flood of literature in the mails, make the continual dropping of water that wears away stones. This insidious but powerful influence can be offset only by a sturdy intellectual independence based on the power of straight, hard thinking, which is in turn founded on a positive constructive study of the work of the masters of pharmacology and therapeutics. Such intellectual independence must be preserved at all cost, if we are to make real progress and live up to the best traditions of our profession.

A second factor that makes us the easy victims of the drug houses is their adoption of short catchy trade names for their products. It is so easy to remember and prescribe a single catchy word. The product may in many cases do the patient good, but will it not often do the doctor harm? We all, including myself, use some of these products, but is there not danger in a catchy name? How often have we heard physicians of standing and ability suggest certain proprietary drugs for patients, and we have asked, "What is in that preparation?" and the reply has been, "Oh, I don't know, it's a thing that I've found gives relief in these cases." Is not this empiricism run riot? Where has the doctor's intellectual independence gone? Where is the intelligent appreciation and understanding of the working of cause and effect? Empiricism is necessary and valuable where our knowledge is too incomplete to explain phenomena, but the true scientific practitioner is ever eager to know the hidden causes of things, and accepts nothing blindly when he can find adequate reasons for the faith that is in him.

Of course, I realize that any idea may be pushed to an extreme. There is some truth in the definition of an educated man as a man who has forgotten a great deal. The only thing is, he should not forget too much, especially in his own chosen field of endeavor. The doctor in question may have investigated the ingredients of the preparation and satisfied himself that it is a rational mixture. He need not remember all the detailed amounts of flavoring material, vehicle, etc., in it, but he should know the amount and nature of the potent drugs in it, the compatibility or incompatibility of its different ingredients, its simplicity or complexity, etc.

Let us look at a few examples of some rather remarkable preparations. One widely prescribed mixture is said to contain the following drugs: alcohol, heroin hydrochlorid, tincture of euphorbia pilulifera, syrup of wild lettuce, tincture of cocillana, fluid extract

of squill, fluid extract of senega, antimony and potassium tartrate, cascarin, and menthol. I wonder if a single physician here would for a moment consider deliberately specifying in detail all these drugs in a single prescription, yet I dare not ask how many of us there are who have never ordered just these same drugs all in one prescription under the catchy and widely advertised name of syrup of cocillana compound! The *fact* that *it relieves cough in many patients* does not alter the *fact* that *this is a shotgun mixture of the first magnitude. We can get results with almost any potent drug in sufficient dosage by prescribing it mixed with all the ingredients of an eight course dinner, every three hours,* but because we *can* do so is no reason why we *should* do so!

I am not objecting to a really ethical proprietary that is in itself a rational mixture. A mixture put up in palatable, permanent, inexpensive form such as we would order compounded by the pharmacist if we did not have the proprietary, is often a useful thing. I can see no objection to prescribing, for example, a ready prepared tablet containing a combination of acetylsalicylic acid, acetphenetidin, and citrated caffein to a patient whom I wish to have this combination of drugs, rather than to needlessly take up the time of a busy pharmacist to put these drugs up in capsules or some extemporaneous mixture himself. I agree with Osler that we *do* owe very real debt to the manufacturing pharmacist. Some of our most potent drugs, e.g. epinephrin, have been developed in the great research laboratories of our manufacturing drug houses. I am objecting to the proprietary *evil*, not the proprietary *good*.

I wonder who can tell the action of *all* the following drugs: thuja occidentalis, pichi, saw palmetto berries, triticum repens, and hyoscyamus? The last named drug is familiar enough, and known to be potent, and saw palmetto may have a diuretic action, but what about the other three? Yet they are all said to be present in cystosedative, which our pharmacists tell me is widely prescribed by physicians. Again the magic of a catch name!

The Harrison Act has greatly lessened the sale of habit forming drugs, proprietary and otherwise, but there is still some room for improvement in this respect. Wampole's hypnobromic compound is, I am told, extensively prescribed by physicians, and is also dispensed without prescription. *Each ounce* is said to contain:

Cannabis indica	1 grain
Potassium bromid	48 grains
Hyoscyamus	1 grain
Chloral hydrate	*96 grains*

A Vermont physician wrote that he had at one time three young women who were addicts to this preparation as a result of thoughtless prescriptions from physicians. (Cf. Journ. A. M. A., Feb. 7, 1920). I am informed that this preparation is often dispensed in eight ounce bottles containing 768 grains of hydrated chloral! What reputable physician would thoughtfully prescribe, or druggist dispense, over

seven hundred grains of hydrated chloral to one person at one time, except under very extraordinary circumstances?

Bromidia contains almost as much chloral as the Wampole mixture just mentioned. Dr. H. C. Wood, Jr. reported a case of a man dying, apparently of poisoning from an ordinary dose of bromidia administered by the patient's father, who was a physician. (Cf. Journ. A. M. A., April 21, 1906, p. 1220.)

So we could go on indefinitely with the shotgun hypophosphite mixtures, the many complex so-called uterine sedative mixtures, the thousand and one tonics and sedatives for all human ills, all kinds of preparations, shotgun, popgun, blowgun, shrapnel, high explosive, and even gas, and, above all, in this day and time, the endocrinomania that seems to be running amuck, almost without let or hindrance, though occasionally the profession is saved from utter disgrace by the voice of a Harvey Cushing crying in the wilderness.

It is of little use to anathematize the proprietary drug houses for these evils. In the last analysis, whose fault is it that they get by with some of the stuff that they do? Ours, of course! Talk to any detail man about the complexity, the uselessness, the dangers, or the incompatible ingredients of his preparations, and he always has one painful comeback: "But, Doctor, ninety per cent of the doctors prescribe it!" I can only sorrowfully say that I know it, admit that it is our fault, and read him the passage from Osler quoted at the beginning of this paper.

What about that much abused organization, the Council on Pharmacy and Chemistry of the American Medical Association? I do not believe that it is infallible, any more than any other human institution, but I do consider it invaluable. If we would only familiarize ourselves more thoroughly with its aims and achievements, we would appreciate it more. Like all reform organizations, whenever it makes a mistake, that mistake is heralded far and wide by a multitude, whereas its real value is often totally unrecognized. No practitioner can investigate for himself, by pharmacologic research, all the new drugs that come to his notice. The Council is a competent board of experts that charts the unknown therapeutic seas for us, and we should appreciate and use it more. If we are touring the country and find a mistake in a road map, that does not cause us to throw it away and try to make our own map, yet that seems to be the position of some with regard to the Council's endorsement or otherwise of proprietary drugs. They feel that the Council has made a mistake somewhere, and therefore take the attitude that it cannot tell them anything. This attitude is encouraged by many of the detail men. Careful consideration, however, will not fail to make us realize the need of a strong central body that can help to overcome the universal *post hoc* error, and thereby correct the fallacies of individual experience; that will counteract undesirable proprietary propaganda; and that can authoritatively publish the glad tidings of new therapeutic discoveries of real value. Especially is such a strong central body valuable in controlling undesirable tendencies in advertising. The rules that the Council has drawn up

regarding the advertising of proprietary drugs make up a very potent influence for good, and I hope the day may soon come when all the medical journals in this country will admit only Council-passed drugs to their advertising columns. It is far better to be too strict than too lax on this point, for advertising is a mighty power, and should never be employed by a reputable journal to further any questionable enterprise.

This does not mean that I want to see any small group become so authoritative as to enslave us. Galen was so great an authority that his opinions impeded medical progress for centuries. Neither, however, do I want to see bolshevism in medicine. We cannot afford to ignore the fundamental principles laid down by the great masters of pharmacology and therapeutics. The council is doing good service in upholding these principles. In this connection, it is well for us to take to heart those ancient words of wisdom inscribed on the Collis P. Huntington Memorial Laboratory in the Harvard Medical School: "Life is short and the art long, the occasion instant, experiment perilous, decision difficult."

To many the Council may seem too conservative. There may be some justice in this view, yet in this day and time, when the well-nigh universal motto seems to be "Give her more gas," it is truly refreshing to find an *intelligently* conservative group, and such a group is so rare as to be priceless. This does not mean, however, that we must all fall absolutely in line with all its minor views and decisions. We must preserve our intellectual independence at all cost, as has been said. Scientific investigation can go on anywhere. No small group can rightly take the attitude, "I am Sir Oracle, and when I open my mouth let no dog bark!" The only real basis, however, of capable independent thought, is a knowledge of fundamental principles derived from a proper correlation of study and observation. Only thus can we profit by our experience as we should, only thus can we fulfill our obligations to our patients, and only thus can we derive the fullness of joy from our work.

DISCUSSION

Dr. W. T. Rainey, Fayetteville, Chairman: All of us, I am sure, have enjoyed this most interesting paper of Dr. Taylor's, and all of us, I am sure, will have to plead guilty. I hope to hear a good discussion.

Dr. N. P. Boddie, Durham: I think I may say that Dr. Taylor has given us a valuable paper, but I think he makes a mistake in ridiculing shotgun prescriptions. We all give them. For instance, who does not give calomel and soda together? They antagonize each other and do better work. Who has not had experience with compound cathartic pills and Warburg's Tincture? These are shotgun prescriptions. I admit there are a great many mistakes made, and perhaps we overdo the matter; yet I think we ought to use conversatism in these things and not condemn things in a wholesale

way simply because a great many drugs are put in one prescription. As Dr. Taylor says, the pharmacologists have done a great deal for us in making preparations more palatable. There is danger, too, in going too far in discrediting people with commercialism. I believe a great many of our pharmacologists are doing great things for the world and are helping humanity in a great many ways. We should put the soft pedal on in trying to break down confidence. What we need in this time, especially, is to be sure there is something crooked behind something before we condemn it. We must have trust in somebody or we shall get to be medical nihilists. The tendency is to try to discredit a great many folks who have made a great many experiments and have had a great deal of experience in preparing medicines. Very often it is necessary to combine medicines in order to get the effect. Often we hear people say that medicine is not worth much, that it is the hospitalization, rest in bed, diet, etc., that count, but often it is because the doctor does not give enough medicine. Medicine must be given in sufficient quantities to produce the physiological effect; to get the therapeutic effect.

Dr. W. C. Ashworth, Greensboro: I do not think we can emphasize too much the great danger in prescribing these preparations. I recall just now a case in which the patient had refilled for an entire year a prescription calling for two ounces of hydrobromic compound every few days. I called up the druggist and my suspicion of hydrobromic compound was verified. He would be there every day or so for his little two ounce bottle of it. The habit is very easily formed, and it is very unfortunate that the patient gets the name and, without the knowledge of the physician, has the prescription refilled from time to time.

Dr. Taylor, closing the discussion: I appreciate this discussion very much. One of the purposes in bringing up this subject was the hope that it might precipitate a frank discussion of the whole thing, because I think it is one of the outstanding problems in the practice of medicine today.

I hope I did not give the impression—I certainly did not intend to—that all these shotgun mixtures are the result of deliberate crookedness. I do not think we have to prove that a fellow is crooked before we can attack him in a scientific way. If his treatment is harmful or useless because he is mistaken, or thoughtless, the effect upon the patient may be as bad as if he were crooked. Some of the best men in the medical profession have brought out things that have failed to make good, and their very greatness is shown by their honest retraction of something they had put out a few years before. They have published work, perhaps, on insufficient data. One of the greatest men in medicine today, Dr. Joslin, said, in making a point: "This is the exact reverse of what I believed to be true and taught my students a few years ago." I think we should look at this matter from the standpoint of eager searchers after truth. We should adopt the attitude of that great master

chemist, Louis Pasteur, whose whole life, almost, was devoted to a passionate attempt to prove himself wrong. Never would he publish anything without attempting to prove himself wrong. We ought to take that attitude first towards our own work and then towards the work of our brother practitioners, towards the manufacturing chemists, and all along. The scientist knows no personal feelings in regard to the scientific side of his work. The physician does know personal feeling toward his patients, but not in investigating scientific matters.

As to the title of my paper, one of my friends said to me a few days before the meeting, "I think the title is too strong; why not cut out that word shame?" I may say that my title is not original; it was used by Dr. Stengel in one of his last lectures to our class in the University of Pennsylvania.

I hope we may get some qualified teacher who knows the action of drugs and who knows therapeutics to conduct one of our postgraduate extension courses some year. I do not believe there is any field in which we (including myself) need teaching more than in pharmacology and therapeutics.

GLUCOSE TOLERANCE

William Allan, M. D., Charlotte

Glycosuria is only presumptive evidence of diabetes mellitus. In diabetes the ability to utilize carbohydrate is partially lost and the first step toward a rational therapy is the determination of how much sugar the patient can still burn.

It was F. M. Allen (1) who has so clearly demonstrated the necessity for promptly getting the patient's urine sugar-free, and determining the glucose tolerance. His method consists in the withdrawal of food until sugar-free, followed by a diet in which the carbohydrate is increased by a definite amount daily until glycosuria reappears. With the patient in a hospital and not in a hurry to return to work this plan works very well in the majority of instances, or it can be modified in mild cases by simply lowering the diet without stopping the patient's usual occupation.

However, in some cases starvation followed by step-ladder feeding will not determine glucose tolerance.

1. For instance, several years ago, we undertook to abolish glycosuria in an emaciated young woman (2) with a history of sugar in her urine for eighteen years. After a week of starvation the glycosuria was unaffected, the blood sugar was normal, and a glucose-tolerance test meal failed to produce hyperglycemia. It soon became evident that we were dealing with a case of renal glycosuria, or so-called renal diabetes. In these cases sugar is always present in the urine, regardless of diet, and it is only by discovering the constant presence of a normal blood sugar level associated with continuous glycosuria that such cases may be identified.

2. In some cases of high blood pressure associated with glycosuria neither manipulation of the diet nor blood sugar estimation will determine glucose tolerance, as recently emphasized by Woodyatt (3). A forty-five-year-old negro man with marked arteriosclerosis and blood pressure 180/120, a four plus Wassermann, and blood sugar .23, was sent in for diabetic treatment. His glycosuria disappeared promptly on lowering his diet, and reappeared again when the glucose value of the diet reached 163 gms. However, when the glucose value of the diet was run up to 271 gms. the total daily output of sugar was only 2.4 gms. with blood sugar .178, so that in spite of the glycosuria there was no limitation of carbohydrate tolerance. Only by controlling the carbohydrate intake and determining the total sugar output in the twenty-four hour urine can tolerance be judged in these cardiovascular cases.

3. Life insurance examinations are frequently responsible for the unexpected finding of glycosuria in young men without symptoms. A report of sugar in the urine forever stamps these men as diabetics in the eyes of the insurance companies, and this situation often means a severe business handicap. It is very important that such applicants have their carbohydrate metabolism investigated, as the stigma put upon them by an insurance examination is often a rank injustice. Of course, the insurance companies must protect themselves and the burden of proof rests on the applicant, but it is to be hoped that the companies will use a more discriminating judgment in those instances where the glucose tolerance is clearly not limited.

Several months ago a thirty-four-year-old man was referred to us for study because sugar had been found in his urine during examination for life insurance. He presented himself one afternoon with glycosuria and blood sugar .12. The next morning he was given 1.7 gms. glucose per kilo body weight on an empty stomach and at the end of the first hour showed glycosuria with blood sugar .185; at the end of the second hour there was only a trace of sugar in the urine with blood sugar .11; at the end of the third hour the urine was sugar-free with blood sugar .085. As in the cases reported by John (4), this man simply had a low renal threshold and showed sugar in his urine whenever his blood sugar rose above .11.

4. Finally, there are times when the determination of glucose tolerance may be impossible because of complicating factors. In November last we saw an emaciated young woman who had been admitted to the Presbyterian Hospital for a slight respiratory infection. Physical examination revealed an active tuberculosis of the left upper lobe, without fever, and sugar was found in the urine. Two days later she went into diabetic coma with blood sugar 1.38 and in the next twenty-four hours was given 230 units of insulin with one ounce of glucose by rectum. the blood sugar dropping to .176 and the coma clearing up. From this time on she ran a high continuous fever and constantly put out in the urine and burned up, together, more carbohydrate than her diet contained, although the diet was shoved up to 40 calories per kilo body weight and 90

units of insulin were given daily in an attempt to check the burning of body protein. She died after four weeks as the result of pneumonic phthisis.

SUMMARY

Glucose tolerance determination is always necessary to confirm a diagnosis of diabetes mellitus and is the foundation on which any rational therapy must rest.

Glucose tolerance may at times be determined by dietary measures and urinalysis alone, but frequently it will be necessary to know the blood sugar level, the type of blood sugar curve after diagnostic doses of glucose, or the total intake and output of carbohydrate in twenty-four-hour periods to avoid mistreating renal glycosuria, cardiorenal cases with glycosuria, or normal individuals with a low renal threshold.

References:

1. Allen, F. M., Stillman, E., and Fitz, R. Monographs of the Rockefeller Institute for Medical Research, No. 11, October 15, 1919.
2. Allan, W. Jour. A. M. M., Vol. 80, pp. 471-472, (Feb. 17) 1923.
3. Woodyatt, R. T. Sou. Med. Jour., Vol. 17, p. 145, (March) 1924.
4. John, H. J. Jour. A. M. A., Vol. 79, p. 1234-1239, (October 7) 1922.

DISCUSSION

Dr. A. A. Barron, Charlotte: I think we get a great deal of satisfaction from the glucose tolerance test. I shall just cite one case. A long time ago, along about 1910, I had occasion to see a man who showed sugar in the urine. He was treated for diabetes for four or five years and was kept on a very strict diet. He continued along on light diet and gradually got back to regular diet. About six months ago he began to feel bad, and his urine was examined and a slight trace of albumin found. He was sent to the hospital. His history and makeup did not suggest, I will say, a diabetic condition, and he was given the glucose tolerance test. Much to my surprise, he showed a high sugar tolerance. He was placed on fairly liberal diet and began to feel better. He had some other troubles, but began to feel better, to pick up, and showed no further sugar in his urine. A second blood sugar tolerance test was perfectly normal, and I think some other little trouble caused the first showing of sugar. I think in this instance it was of great value, because the man undoubtedly is not a diabetic.

Dr. Allan, closing the discussion: I have nothing more to say except that I have had the humiliation of treating patients for diabetes after determining their supposed sugar tolerance by withdrawing the diet and then gradually increasing the diet, and then after a few years examining them in a better way and finding they did not have diabetes at all, and having to go to them and tell them I had been treating them for the wrong thing all the time.

THE USE AND ABUSE OF ALCOHOL IN PRACTICE

G. H. Macon, M. D., Warrenton

Prohibition is a settled question in North Carolina as regards the average healthy individual, but what about the sick who are really in need of alcohol? The laws of the State are so framed that it is absolutely illegal to procure whiskey or brandy for medicinal purposes.

In conversation recently with a friend who is interested in a large hospital in North Carolina, and who is doing real scientific work, the question of whiskey stimulation came up. I inquired of him if he used whiskey in his institution. His reply was, "Yes, all the good whiskey we can get." "Where do you get it from?" His reply was, "We have to depend upon the bootlegger for our supply, I'm sorry to say, but we find it absolutely essential in our institution to use it, and the State law makes no provision for us to procure it, so we are at the mercy of the bootlegger, and every time we get this whiskey we are adding to the wave of lawlessness which is sweeping our State."

I asked a prominent baby specialist his opinion in regard to the use of brandy or whiskey as an aid in the practice of pediatrics. His reply was, "I would feel pretty helpless with a desperate case of pneumonia in a child without some form of alcoholic stimulation to combat the dangerous symptoms."

In the elderly who are convalescing from acute infectious illnesses I am firmly convinced that the proper use of alcohol under these circumstances shortens the convalescence and improves their appetites and sense of well-being, and depriving patients of alcohol when it is indicated would be just as bad practice as to put some one by the side of their bed at night and deprive them of a night's rest.

Alcohol is invaluable in poisoning by the cardiac depressants and snake venom, and in impending cardiac failure from any cause.

When the first sound of the heart in pneumonia becomes feeble and dull, I have never found any preparation that would take the place of whiskey. It is an absolute necessity in the treatment of acute lobar pneumonia if the patient has been accustomed to its daily use as a beverage, but in other subjects of the disease it is best to give it at the crisis only, to tide the patient over a brief period of extreme danger. In desperate cases of cholera infantum in children good brandy in moderate doses has certainly obtained results for me. Stimulants are unnecessary for the young and for people living perfectly healthy lives, but under the stress and struggle of modern civilization few of us beyond middle age are placed under normal physiological conditions and a little alcohol helps us to round the corners and to plane the experites of existence.

Alcohol or whiskey is a stimulant, tonic, sedative, digestive, a food, and, unless we run into excess, no physical damage can pos-

sibly be done to our tissues. The argument in its favor—when wisely and prudently used—seems complete. It is the most reliable antidote we have for poisoning by carbolic acid or its derivatives, for a stomach pump in the above conditions always does more harm than good, being liable to penetrate the already damaged and corroded stomach. Alcohol dilutes the poison and also has a dehydrating and astringent action on the tissues, thereby preventing the absorption of carbolic acid.

Contra-indications: Alcohol or its derivatives is advised against in the following conditions, viz: Nephritis, inflammatory conditions of the urinary passages, gastric or intestinal irritation and in persons who are liable to acquire the alcohol habit, especially the young. In cardiac depression of long duration alcohol is strongly advised against. Wines, and especially the sweet wines, are, as we all know, harmful in diabetes. The syphilitic should not be allowed to indulge in alcoholic stimulation, and the various skin diseases do badly when alcohol is taken.

THE PRACTICAL APPLICATION OF POLYGLANDULAR THERAPY IN WOMEN

J. S. Brewer, M. D., Roseboro

The problem of the glands of internal secretion is perhaps the most important and far-reaching that has engaged the attention of modern medicine. It is at once a study that is most appealing and fascinating. There is much of mystery in it and speculation has more than once influenced our ideas regarding the workings of these glands in physiology and disease. The research and keen observations of clinicians and laboratory experimentation during the past few years have added considerably to our knowledge of this subject, but my own feeling is that we are yet very much in the dark and have a great deal more to learn before we can summarize our knowledge and draw deductions that will be applicable in more than a general way, excepting, of course, certain well known instances.

There are certain disturbances that can be localized and the gland at fault named. Among these may be mentioned the thyroid in cretinism and myxedema, the pituitary in infantilism and diabetes insipidus, and the adrenal in Addison's disease. But in a great many of the disturbances, while they may be recognized as of endocrine origin, the particular gland or glands at fault cannot always be accurately pointed out. This is because of the intimate association of the glands one with the other and the influence they have over one another, which association and influence are not fully understood and explained by physiologists.

It is now very definitely known that the endocrines play a definite part in the physiology and pathology of the female generative tract. They are often the cause of disturbances of menstruation and conception, and many other physical and nervous disturbances may be

dependent upon imperfections of these functions. It may be the ovary at fault, the adrenal, the pituitary or the thyroid. More probably it is more than one gland, for, as they are all closely related, dysfunction in one may influence one or all of the others. In the present state of our knowledge one is ofttimes unable to unravel and solve the problem in a given case and is forced to rest with a diagnosis of endocrine disturbance. This helplessness should serve to stimulate more careful observation and study, nor should this study be left entirely to the research worker. It is a subject about which the general practitioner should and will be able to tell much, if he is an observant student. It is he, of all men, who can see his patient month after month and year after year. There is no field in medicine more potent for the active practitioner than the endocrine system.

The work of Brown-Sequard brought the glands of internal secretion and applied endocrinology prominently before the profession and excited general study of their activities and the possibilities of organotherapy. The discovery of the hormonic activity of these glands was the most important step in the study of their physiology, and this fact is the foundation stone on which the whole structure of endocrine pathology and therapy is built. Hyperthyroidism and hypopituitarism were among the first disturbances of function of which we learned. Later, as the influence of one gland over other glands became known, the whole field widened and increased in complexity. This influence is not fully known and understood yet. But we know that they influence one another, as witness the sexual imperfections in hypo-function of the pituitary and thyroid disturbance at puberty and its enlargement at menstruation and during pregnancy; also there is frequent association of tumors of the adrenal cortex with sex anomalies, and during breeding and pregnancy the adrenal cortex enlarges.

There has been much empiricism in the treatment of disease with gland extracts. The whole field has been very much overworked by certain enthusiasts and manufacturers doubtless well known to you. No doubt this has wrought much harm, and we ought ever to be on guard to separate the wheat from the chaff. Unfortunately, a certain amount of empiricism exists in certain instances of glandular treatment, but this is no more than is found in other methods of treatment. Strictly speaking, this is indeed most unfortunate, but it should not condemn the whole field of pluriglandular disease and treatment, for, as Barker says, "The clinic is test," and certain definite and remarkable results from this field of therapy are known.

The basis of polyglandular therapy is established by the hormonic activity and interrelation of the ductless glands and certain clinical results that have been obtained. The principles upon which gland treatment rests are as follows: (1) Supplemental. Example, thyroid in myxedema. (2) Substitution. Example, ovary in artificial menopause. (3) Stimulation. Example, pituitary and adrenal in hyposexualis. (4) Influence over nervous and sympathetic systems, as thyroid, gonad and adrenal over asthenia and low blood

pressure. The question may well be asked, why polygland treatment? Not all cases require mixed treatment, and of course those whose needs are met by a single gland should receive no others. We use mixed treatment in cases where there is evidence of disturbance in two or more glands and in those cases which are clinically of endocrine disturbance, but in which there is not sufficient evidence to point to any one gland as being the prime offender. There is also an occasional case in which clinical experience proves the mixed treatment to be the more efficient. There are those who are opposed to mixed treatment of any form because it smacks of "poly-pharmacy." In cases with general endocrine disturbance they advocate beginning with one gland and trying that for a while and shifting to other glands as needed, and so on until the desired result is obtained. This may not be "poly-pharmacy", but, I ask you, is it not polygland treatment?

We can use single gland treatment in cretinism and hypothyriodism, pituitary deficiency and the artifical menopause. In a class of cases not so marked, but the result of endocrine disturbance just the same, I have found mixed gland treatment the more satisfactory. These cases represent neurasthenia, hysteria and nervous and emotional distress in women with or without menstrual disturbance. Amenorrhea, dysmenorrhea, too pronounced or irregular bleeding, and sterility may yield to polyglandular treatment. You are all familiar with the woman who is organically well, but who is functionally sick and distressed. She often responds remarkably to gland treatment. A combination of pituitary, thyroid, adrenal and gonad is used in most cases, though in certain cases one or more should be omitted, as the pituitary in the menopause associated with hypertension.

The following cases will illustrate the method of application and some of the results obtained.

Case 1. Mrs. K. P., widow, age 28, one boy five years old. Complained of nervousness and emotional disturbances, loss of strength, and irregular periods with excessive flow. The period came from two to four weeks and lasted 5 to 10 days, with considerable loss of blood. This was the most nervous woman I have ever seen. No evidence of organic disease was found. Under mixed gland treatment she improved remarkably and in four months the periods were regular and the flow moderate; she had gained in strength and was not nervous. This was in 1921 and she is at present well.

Case 2. Illustrates the result in a case of amenorrhea and sterility. Mrs.——, age, 25, married four years, no pregnancies. Periods were irregular and painful and the flow was scant. Sometimes she would go for three or four months without menstruating, and rarely did she menstruate consecutively for more than two months. She had been under the care of an able man who had given her whole ovary and then corpus luteum without result and who at last strongly urged operation, which was refused. She came under my observation in September, 1921, and was at once put on polygland treatment, which was continued until July, 1922. In November, 1921, a little more than a month after begin-

ning treatment, she menstruated and continued to do so regularly and monthly until June, 1922, when she became pregnant. Unfortunately this pregnancy had to be interrupted at the third month because of toxemia. The periods returned and continued at proper intervals until February, 1923, when she again became pregnant. This pregnancy resulted in an abortion from trauma at two months. The period again reappeared and continued for several months. She is now in the fourth month of a third pregnancy.

Case 3. A patient of Dr. W. T. Rainey. I report this case because it illustrates success with mixed treatment after failure with the single gland. This lady, Mrs. H., age 42, had had hysterectomy with removal of both ovaries and was suffering with all the nervous and emotional phenomena attendant upon an artificial menopause, such as dizziness, hot and cold flashes, and crying attacks. Ovary and corpus luteum were tried separately in Philadelphia and Fayetteville without result. When she was put on mixed treatment improvement was prompt. She undergoes treatment for three months each year and keeps well.

Case 4. Illustrates another type. Mrs. J. C. B., age 35, several children. Was very weak and nervous, backache, appetite and digestion poor, periods irregular with excessive flow. She had a badly lacerated cervix and perineum with retroverted uterus and pronounced leucorrhea. I insisted that she have operation, but she refused. I tried local and systemic treatment without result. Finally I gave her a prescription for 100 hormotone tablets and in a month she came back and wanted more tablets, as she was improving. She has continued this treatment for three months and is much improved. Certainly she is in much better condition to stand operation now than formerly.

Case 5. Is a young woman, age 21, who came with acne of several years' duration which had been very refractory to treatment. She was nervous, with asthenia and emotional disturbances, anorexia, indigestion, and amenorrhea. Under gland treatment and autogenous vaccine she improved rapidly, the periods became regular and the flow free, and the acne improved considerably.

I was interested to read a report by Philips in the Proceedings of the Royal Society of Medicine for September, 1923, on the treatment of dysmenorrhea with extracts of the ductless glands. Fifty cases were treated. Forty-six of these cases were relieved. Extracts from the thyroid, corpus luteum, pituitary and mixed gland products were used. The majority of cases were treated by hormotone alone or combined with anti-spasmodics. It was significant that when the hormotone was omitted the painful periods returned, only to disappear the next time the hormotone was readministered.

In conclusion, may I call attention to certain important facts in connection with glandular therapy in general and pluriglandular treatment in particular? A patient undergoing gland treatment should be under the careful observation of the physician, and especially is this true if mixed treatment is being used. Over-treatment with one gland or another may result if the patient is not under observation. Another point is the dosage. Sufficient amount must be given if results are to be obtained. It is better to begin with a small dose and increase to the desired point. The amount necessary

varies with the individual. The length of time necessary to get results is important, and it cannot be foretold in a given case. I usually tell a patient that if one is not willing to take the glands for two or three months, one had as well not begin. In that time results are usually evident and the patient is willing to continue as long as is necessary, or if we are going to fail that will also be evident in that time. Finally, polygland therapy properly applied will give gratifying results, but it is not to be used when single gland treatment will suffice. In properly selected and suitable cases it is well worthy of trial.

DISCUSSION

Dr. A. A. Barron, Charlotte: The paper was extremely interesting. I think, as a rule, you will get more favorable results by pluriglandular treatment than by a single gland. This is no doubt due to the fact that so many of the glands are closely related, and whatever causes disturbance of one causes disturbance of the others. I think in the majority of these cases there is some obscure infection which should always be looked for.

Dr. D. W. Holt, Greensboro: I would like to say I enjoyed Dr. Brewer's paper. His experience has been very much like mine. For a time I felt a little skeptical, but I am beginning to believe there is something to polyglandular therapy. Authorities are more or less divided on the internal secretions. I see patients who are benefited, and some who are not. I believe polyglandular treatment gives better results than single gland treatment. I have a patient, eighteen years old, weighing two hundred and forty-eight pounds, who has been under treatment six weeks and is responding beautifully, losing weight, and her mental condition clearing up.

Dr. Brewer, closing the discussion: Of course, we all know that glandular treatment at the present time is not on as accurate a scientific basis as we would like to have it. There is more or less art in knowing just which type of case is going to respond to glandular treatment when one is unable to point out a particular gland at fault. The main essential for success is to give sufficient dosage and give it for sufficient length of time.

THE TREATMENT OF HYPERTENSION AND ASSOCIATED CONDITIONS

I. P. Battle, M. D., Rocky Mount

The advent of routine blood-pressure readings in clinical examinations has served to greatly emphasize a condition, the chief physical sign of which is increased arterial tension, or high blood-pressure.

Just what constitutes hypertension depends upon the individual's age, weight, and, to some extent, sex. Symonds,[1] analyzing the blood-pressure findings of 161,000 life insurance examinations, states: "The results were not good at any age when the systolic pressure was above 145 as compared with the general results. The combination of a blood-pressure over 160 and any excess weight makes distinctly for a high mortality."

The clinician, however, dealing with the individual as he does and not with thousands, attaches less importance to pressure this low than does the life insurance director. Often he is not consulted until there is some serious damage to special organs, as retinal hemorrhage, cardiac decompensation, or nephritis, and the pressure 200 or over.

Fahr[2] had given us some interesting figures on the incidence of what he terms the hypertension heart. Quoting the mortality statistics for 1920 he calls attention to the fact that heart disease, exclusive of acute endocarditis and pericarditis, caused the death of 124,000 persons, or approximately twice the number that died of cancer. Of this 124,000, 96,000 were 45 years of age and over. He estimates that approximately two-thirds of these were due to so-called chronic myocarditis. From a study of 4,000 autopsies in which the clinical histories were available he believes that 75 per cent of the so-called chronic myocarditis cases are directly associated with hypertension. According to his estimates approximately 50,000 died in 1920 from over-work of the heart, due to hypertension. If we accept Fahr's figures, the condition in which we have prolonged hypertension ranks next to cancer as a cause of death.

The absence of definite knowledge as to the actual causative agent of this condition explains the varied and empirical ideas that have been advanced for its management. The specific treatment of hypertension may be dismissed with one sentence: "Treat syphilis if present, and remove focal infections." It is doubtful, however, if either of these factors play much part from a percentage standpoint in the production of hypertension.

The purpose of this paper is to outline briefly the management of these cases. The whole object of treatment should be to prevent or delay as long as possible the conditions that follow a prolonged elevation of blood-pressure. To look upon a decided drop of pressure at the end of a few weeks' treatment as a criterion of permanent improvement is ridiculous. The former level is usually soon reached if the patient returns to his previous habits of life.

Treatment may be conveniently considered under three heads. In the order of their importance I should name them : (1) Rest and exercise. (2) Diet. (3) Drugs.

Rest and Exercise: The amount and kind of exercise and rest to prescribe depends, not so much upon the height of the pressure, but rather upon the temperament and habits of the patient and the

condition of the patient's organs, especially the heart. Absolute rest in bed is not advisable unless there is some immediate danger to heart or vessels. It is necessary, however, to relieve the strain over a long period of time. To accomplish this, one or more rest periods during the day should be advised. If only one rest period is ordered it should come after the mid-day meal, so as to divide the day into two equal parts. It is best that the patient should undress and get in bed for this rest. A few days or even weeks of one to two hours in bed amounts to very little. On the other hand, such a daily habit over a period of years amounts to a considerable saving of the work done by the heart. For the same reason, the longer that the patients can make their bed rest period at night, the better.

In some cases mental rest is probably more important than physical rest. This is a harder problem to deal with than physical rest. It is easy to advise these patients to "Go into intermediate or low gear," as I once heard a prominent clinician direct, but it is often no easy matter for the patient to carry out this advice. Some form of out-door exercise, if it is a recreation, should be indulged in. We are fortunate if our patient has a hobby of the kind. Mackenzie[3] admirably sums up the whole question of rest and exercise in this statement: "The principle I pursue with most success is to place the patient under conditions that give the heart less work to do, carefully avoiding 'cardiac tonics' and 'vaso-dilators', restricting the diet, evacuating the bowels, and permitting such exercise as the patient can take without distress. . . ." A very unfortunate state of mind is that in which the patient seeks frequent readings and attaches undue importance to every slight variation.

Diet: The diet to advise in cases of hypertension depends upon the general condition and habits of eating of the individual, whether he is over-weight or under-weight, and the condition of the kidneys. Various diets based on a supposedly etiological relationship of some particular food element have been advocated. On account of the association of nephritis and hypertension a low protein diet was the fashion for a time. Strouse and Kelman[4] have shown that variation in the amount of protein has but little, if any, effect on the blood-pressure, even in cases of frank nephritis. Allen and Sherrill[5] in 1922, assuming sodium chloride to be the offending food element, reported the results of the treatment of 180 cases of severe hypertension by extreme salt restriction. These cases were treated over periods varying from one month to three years. They seem enthusiastic over this method and claim 34 cures, or 18.9%. O'Hare and Walker[6] cannot conceive of the slow changes in salt metabolism bearing any definite relationship to the rapid and frequent changes that occur in blood pressure. The method of extreme salt restriction as advocated by Allen is not easily carried out in general practice and there is certainly not enough clinical evidence of its value to warrant its adoption.

We cannot expect to bring about much effect upon the blood pressure by any reasonable restriction of a single element of the diet. It is true, however, that a large percent of these patients are

over-weight and eat too much. It is also true that it is not within the power of the physician to tell which case of essential hypertension is going to later show evidence of nephritis. I believe it is a reasonable procedure to so restrict the diet in the over-weight cases that there is a gradual return to what would be within the average weight for that individual. Further reduction in weight due to diet is not desirable and may be dangerous. I think we should look upon all cases of essential hypertension as potential nephritics and use a diet with moderate protein and salt restriction. Such a diet might correspond to that a little above what would be termed a high nephritic diet. Christian[7] suggests a weekly vegetable day. If we are dealing with a frank nephritis associated with hypertension the diet is a simpler matter. A definite restriction of protein and limited salt intake is indicated. In this connection I know of no more helpful article in recent medical literature, from the point of view of the general practitioner, than that of O'Hare and Vickers on the home management of the diet in nephritis published in J. A. M. A., Nov. 10, 1923.

Drugs: Drugs play but a small part in the management of essential hypertension. A saline purgative should be taken once or twice a week. Clinicians of national and international reputations rather empirically advise small doses of iodides in obese types. Three to five grains of iodide of potash, three times a day, at least does no harm. On the other hand, these clinicians dismiss the vaso-dilators with a word of contempt. In several instances I have thought that the old prescription of Sir Lauder Brunton,—sodium nitrate gr. 1, potassium nitrate gr. 10, and potassium bicarbonate gr. 10, *tid*—given for four or five days at a time, not only affected the pressure but relieved the headache and cervical pain so often complained of.

Drugs are of more value in late stages when definite signs of heart failure occur. Here digitalis and morphine are our main weapons to prolong and render more bearable what is usually the beginning of a hopeless fight. I have learned not to be afraid of digitalis on account of the presence of hypertension. I believe the drug seldom if ever carries the pressure above the level it had attained before cardiac decompensation began. In private practice we have no means of telling just how potent is the preparation of digitalis we order, but as a rule good results may be expected from a fresh tincture. If there is a decided indication for the drug I give it in teaspoonful doses three times a day. Three to twelve doses of this kind is sufficient. More than twelve means that you are either using an inferior tincture or the patient's heart has gotten past hope of greatly affecting it with digitalis. After the heart has steadied and acute symptoms have passed the drug may be discontinued or kept up in smaller doses.

A repetition of attacks with difficult breathing and sleepless nights will occur, and sooner or later a condition is reached when digitalis has but little effect upon the heart. The patient is then entitled to what relief morphine may give. But before this stage is reached, in the acute attacks when there is a struggle for breath

and the patient is in a cold clammy sweat with much edema of the lungs, a single dose of morphine with atropin not only relieves but probably often prolongs life.

REFERENCES

[1]Symonds, Brandreth. Blood-pressure of Healthy Men and Women. J. A. M. A. 80, 232 (Jan. 27) 1923.

[2]Fahr, George Edmeston. Hypertension Heart. J. A. M. A. 80, 981 (Apr. 7) 1923.

[3]Mackenzie, Sir James. "Diseases of the Heart," page 144.

[4]Strouse, S., and Kelman, S. R. Protein Feeding and High Blood-pressure. Archives of Internal Medicine, Feb. 1923.

[5]Allen, F. M., and Sherrill, J. W. Treatment of Arterial Hypertension. Journal Metabolic Research. Oct. 1922.

[6]O'Hare, J. P., and Walker, W. G. Salt in Vascular Hypertension. Archives of Internal Medicine. Aug. 1923.

[7]Christian, H. A. (Treatment of essential hypertension.) Oxford Medicine. Vol. 3.

DISCUSSION

Dr. A. A. Barron, Charlotte: It seems to me there is one thing we fail to do in a lot of these cases of so-called hypertension, where you can't find anything except high blood pressure. There is no doubt that there is a whole lot to be accomplished, you might say, through psychology. I don't mean doing anything in the way of a therapeutic measure, but you can do a whole lot in relieving anxiety, symptoms of which usually develop. There is no reason why a man with high blood pressure can't go along and be a useful citizen for a long while, if you can control that feature. I think if we can control that feature it will frequently help a man to reduce his blood pressure. In so doing, we naturally suggest to him rest and recreation. I haven't gotten much good from drugs—in fact, I think it is harmful to put a lot of these cases on salts continually, because sooner or later you get an irritated condition of the gastro-intestinal tract. I think a mild laxative, preferably some oil, is the thing to use. In the way of diet, I think the most important is simple diet, and above all not to overload.

THE VEGETATIVE NERVOUS SYSTEM IN RELATION TO GENERAL MEDICINE

A. A. Barron, M. D., Charlotte

We all are aware of what is meant by the vegetative nervous system and of its two divisions, the sympathetic and parasympathetic or vagus set of nerves, but it occurs to the writer that we are apt to forget or ignore how great an influence this portion of the nervous system may, and does, exert upon our various organs and therefore our happiness and comfort. Briefly, the vegetative system supplies

all structures which carry on those acts such as breathing, digestion, and the circulation of the blood. Every bit of unstriated muscle and every secreting gland of the body is under the control of this system of nerves. We may recall briefly some of the symptoms resulting from overstimulation of the parasympathetics, such as heart block of vagal origin and its relief by atropin; pylorospasm and the value of atropin in its antagonistic action on the vagus in aiding as a differentiation between organic and spastic obstruction, seen especially in infants. As a result of the overstimulation of the sympathetic we recall the irritable heart and tachycardia—the effect of certain depressive emotions, such as fear, anger, pain and discontent causing a general sympathetic stimulation and as a result being a possible etiological factor entering into the production of certain metabolic disturbances, such as diabetes, etc. Also the syndrome of autonomic imbalance, including such symptoms as tachycardia, tremor, exophthalmus, sweating, asthenia and diarrhœa in the absence of hyperthyroidism.

Needless to say, in the discussion of this subject my review and remarks will have to be rather fragmentary and my discussion will be directed chiefly to the effect of this system on some of the important viscera.

In consideration of the vegetative nervous system it must be understood and remembered that the voluntary nervous system, the vegetative nervous system and endocrine glands, while separate and distinct in their functions, are nevertheless not wholly independent.

With few exceptions it is known which tissues are activated by the sympathetic nerves and which by the parasympathetic; which are activated by the sympathetics and inhibited by the parasympathetics, also which are activated by the parasympathetic and inhibited by the sympathetic.

The relationship of certain glands of internal secretion to the vegetative nerves is fairly well established. For example, it is known that the adrenals, thyroid and pituitary are activated by the sympathetic nerves, and that the internal secretions which they produce in turn cause similar action in tissues affected to that caused by sympathetic stimulation. The internal secretions of the testicle and the corpus luteum seem also to be related to the sympathetic system. The parathyroid, the pancreas, the secretion-producing glands of the duodenum are classed with the parasympathetic system. Aside from the relationship which certain glands of internal secretion bear to either the sympathetic or parasympathetic system, they also bear a certain relationship to each other. This is evidenced in the inter-relationship of the thyroid, adrenals and pituitary on the one hand, and their antagonism to the pancreas on the other, in the production of hyperglycemia and glycosuria.

THE ACTION OF THE SYMPATHETIC AND GREATER VAGUS IN THE IMPORTANT VISCERA

In order to understand more fully the action of these two systems, it might be well to take up the important organs and show

the tendency which will result from overstimulation of each of the divisions of the vegetative system. In the eye, we have the fibers of the greater vagus running through the third nerve, stimulation of which produces a contraction of the pupil and ciliary body (accommodation spasm) and a widening of the palpebral fissure. Stimulation of the sympathetics, on the other hand, dilates the pupil and causes contraction of Mueller's muscle, throwing the eyeball forward. Thus we can see that a disturbance in the equilibrium in the vegetative system in the eye influences accommodation; and this shows us why it is extremely difficult to fit glasses to patients whose nerve equilibrium is disturbed (neurasthenics). It also explains the disturbance in accommodation during toxemia, because toxemia acts upon the sympathetic system and disturbs the normal equilibrium. Stimulation of the vagus increases the secretion of tears; while stimulation of the sympathetic decreases it.

In the gastro-intestinal tract, vagus stimulation increases appetite; increases gastric secretion, including hydrochloric acid; increases the secretion of the mucous glands of the gastro-intestinal tract and the secretion of the liver and pancreas. Sympathetic stimulation decreases appetite; decreases the gastric secretions, including hydrochloric acid; decreases the secretions from the mucous glands of the intestinal tract, liver and pancreas. Vagus stimulation increases motility of the stomach and intestines. Sympathetic stimulation decreases motility of the stomach and intestines.

Thus we can understand the dry, furred tongue, decreased digestive capacity, and constipation which accompany toxemia, particularly that of the acute type such as is found in the acute infectious diseases. This is an indication of marked sympathetic stimulation. Hyperacidity, hypermotility (either gastric or intestinal), pylorospasm, and spastic colon, are all indications that the equilibrium of the vegetative nervous system has been upset, and that the vagus has been the division which has been overstimulated.

In the respiratory system, vagus stimulation increases the irritability of the mucous membrane of the nose and throat; increases the secretion of mucus in both the nose and throat; also produces bronchial spasm and increases bronchial secretion. Sympathetic stimulation decreases the secretion and irritability of the nose and throat, and decreases the bronchial secretion and relaxes bronchial spasm. Hay fever and asthma, then, are both expressions of increased vagus stimulation. Both may be ameliorated or relieved by the administration of atropin, which is a direct pharmacological antagonist of the vagus, or by adrenalin, which stimulates the sympathetic nerves and causes them to oppose the vagus.

In the circulatory system, conditions are different from what they are in the respiratory and digestive systems. In the respiratory and digestive systems, the greater vagus is the system which produces increased muscular activity, while the sympathetic causes muscular relaxation. In the circulatory system, however, the opposite is true. Stimulation of the sympathetic produces vaso-constriction, increases the rapidity of heart action, and raises blood pressure; while the

vagus system slows the heart's action, causes reduction of blood pressure, and in some instances apparently opposes vasco-constriction, although other factors come in here which make this phase of the subject extremely difficult to understand.

Nearly all the secreting organs (suprarenals and thyroid are exceptions) have their secretory power increased by vagus stimulation, and it seems that each organ produces metabolites during its action, which act upon the arterioles and produce vaso-dilatation. In this way we account for the fact that each organ during activity shows a dilatation of its blood-vessels which affords the opportunity for the increased supply of blood necessary for the extra work thrown upon it.

The innervation of the sweat glands is as yet difficult to understand. Sweating seems to be a part of both increased sympathetic and increased vagus stimulation. Pilomotor muscles are supplied by the sympathetic system.

The study of the vegetative system has been facilitated by the fact that here are certain pharmacological remedies and certain internal secretions which act largely or wholly on one or the other division. Adrenin acts upon the sympathetic system, and when injected into the body produces the same symptoms as though the sympathetic system itself was stimulated. Pilocarpin, on the other hand, produces for the most part the same group of symptoms as is caused by increased vagus stimulation. Atropin has proven to be antagonistic to the greater vagus. Ergotoxin is used at times as a depressant of the sympathetic fibers.

As results of the above it is recognized that when the tonus in either the sympathetic or greater vagus is increased we should have more or less definite pictures. This might be spoken of as the syndrome of increased sympathetic tonus and the syndrome of increased vagus tonus. It is unnecessary to say that numerous mixed and transitional forms are seen and many seemingly contradictory facts met. Time does not permit to go into these various syndromes, but it is desired to make reference to a classification of some of the common symptoms indicative of functional derangement. Analysis shows that in the respiratory system, the digestive system (with the exception of the ileocecal valve and the internal anal sphincter), and the genito-urinary tract, increased sympathetic stimulation produces hypofunction both in muscular and secretory structures. In the circulatory system, on the other hand, increased sympathetic stimulation produces a hyperfunction, giving an increased rapidity of heart beats and general vaso-constriction.

Increased stimulation of the greater vagus, on the other hand, produces a hyperfunction in the respiratory, gastro-intestinal and genito-urinary system, increasing secretion and motility. In the circulatory system, on the other hand, it slows the heart beat, lengthens diastole and weakens the ventricular contractions.

SOME SYMPTOMS REFERABLE TO GASTRO-INTESTINAL TRACT

Hyperchlorhydria. There are many functional disturbances on the part of the gastro-intestinal tract that can be separated according to their action upon the sympathetic and greater vagus. Hyperacidity must be looked upon as a functional derangement. It may result from an organic disease of the stomach itself or from any irritation which expresses itself in increased tonus of the gastric branches of the vagus. It is common as a symptom of gall bladder disease and of appendicitis. It likewise comes in tuberculosis as a result of the inflammation of the lung tissue: and can be found as a result of inflammation in many of the other important internal viscera. Hyperacidity is usually accompanied by either an increased tone of the stomach wall or increased motility. It is very likely to be accompanied by some degree of increased tone in the pylorus, which at times may result in definite spasm.

Hypochlorhydria—Hypochlorhydria is commonly found in patients suffering from acute infectious diseases or chronic infectious diseases, during stages of acute exacerbations. The depression of gastric secretion, including hydrochloric acid, is due to the toxemia acting through the sympathetic nervous system. This accounts for the long recognized fact that hydrochloric acid is frequently indicated in therapy in convalescence from acute infections.

Intestinal Stasis—The subject of lessened motility in the intestinal canal has received much attention during recent years. Intestinal stasis may be due to either stimulation of the sympathetics or vagus. The motility of the ileocecal valve is controlled by the sympathetic nervous system, as occurs in acute toxemia, and in the presence of acute infectious diseases, it would be natural that there should be some interference with the ileocecal valve, retarding the emptying time of the ileum. Such conditions are also accompanied by a relaxation of the gastric and intestinal musculature and a lessening of the secretion of the gastric and intestinal mucous membrane, which would also have an influence in retarding the onward movement of the intestinal contents. The motility of the colon being also decreased by the same stimulation, the stasis of the intestinal contents is continued on throughout the entire bowel.

Ileostasis due to vagus stimulation is of another type. Moderate vagus stimulation has a tendency to increase the tone of the muscles of the intestinal tract, and if it exerts itself particularly upon the circular muscle fibres, we have a constriction which interferes with the movement of the intestinal contents, leading to the very common condition of spastic constipation. Atropin will act as a very beneficial agency in the relief of these cases.

Spastic constipation is nearly always accompanied by some degree of hyperchlorhydria. The reverse is also true. If the longitudinal fibers are overstimulated, diarrhoea results.

SOME SYMPTOMS REFERABLE TO CIRCULATORY TRACT

Bradycardia—Bradycardia is a symptom of increased vagus tonus. It has been noted in inflammation of the gall bladder, some-

times as a symptom of appendicitis, and also in inflammation of the stomach and intestines. It is noted commonly as a result of inflammation of pulmonary tissue. It can result wherever marked irritation of the vagus takes place, providing it expresses itself reflexly in the cardiac branch of that system.

DISTURBANCE IN AURICULO-VENTRICULAR CONDUCTION

Not infrequently, as a result of vagus stimulation, there is a disturbance in conduction of the impulse, so that the auricular contraction is not properly conducted to the ventricle. This forms a partial heart block. This is the type of irregularity that is produced by digitalis. It can be overcome by lessening the vagus irritation by the administration of atropin, or by overcoming it by stimulating the sympathetics with adrenalin.

An instance of heart block of vagal origin is seen in the instance of Babcock's case. A man, sixty years of age, sought advice because of heart disease with heart block. His history revealed that six months previous he had been treated for mucous colitis, and for a number of years he had suffered from gastric indigestion and other abdominal symptoms suggestive of gall bladder disease. A diagnosis of chronic cholecystitis and heart block of vagal origin was made. Atropin caused the disappearance of the heart block.

Tachycardia is sometimes the symptom of direct sympathetic stimulation. This is the type that we find in the presence of acute toxemia; also that which is produced by the administration of adrenalin and by such depressive emotions as worry, fear, discontent and discouragement.

Summarizing, the name vagotonia has been applied to the conditions showing hyperactivity of the parasympathetics. These cases usually present active salivary secretions, tendency to free perspiration, moist hands and feet, bradycardia, bronchial asthma, respiratory arrythmia, increased gastric and intestinal tone, gastric hypersecretion and hyperacidity. Vagotonic symptoms are exaggerated by pilocarpin and at least partly relieved by atropin.

In instances of over-activity of the true sympathetic, we find frequently exophthalmus, free salivary secretions, low gastric acidity, gastric and intestinal hypomotility, tachycardia and dry skin.

Definite evidence of disturbances of the vegetative system are frequently seen and in a variety of conditions. Mixed types are much more common than pure types of either group. Many of the so-called general asthenic states, psychoneurotic manifestations, etc., belong to disturbances of this system.

Such pathological processes as gastric ulcers, appendicitis, gall bladder disease and intra-abdominal adhesions produce definite disturbances of this system. Aside from definite pathological conditions, long continued nervous fatigue and emotional disturbances also form an important element. Also postural abnormalities, including the more pronounced cases of visceroptosis, play an important part in causing disturbance. Probably two factors deserving of the greatest

emphasis—so far as one can judge from clinical observation and therapeutic and operative results—are obscure infections and disturbances involving the glands of internal secretion.

THE SUB-LETHAL OR STIMULATING DOSE OF RADIUM

Will D. James, M. D., The Hamlet Hospital
Hamlet

The problem of dosage in the application of radium therapy is one which has proved most perplexing. At times one will read in the literature of a specific lethal dose for a lesion of this nature, while another type of lesion requires a different dosage to produce lethal effects on the neoplasm. Empiric statements such as these are likely to be misleading, in that the factor of dosage in the specified number of milligram-hours of radium exposure is the keystone to the procedure, and, following this set "rule of thumb," the physician should expect brilliant results. Such, however, does not always obtain, as some of the results of the early operators with radium bear mute evidence.

Quite a few factors must be taken into consideration in laying out the plan of treatment. Naturally, the patient is deserving of paramount attention, meaning by this that a careful physical examination, to determine the individual's physical status, should precede the attention to the pathological lesion itself. Were one to disregard this rule and, in so doing, cure the condition at the expense of disastrous results to the patient, the state of affairs would naturally fall into the class of that formal newspaper witticism of "The operation was successful but the patient died." Treatment should be made on rational lines which are evolved from a consideration of physiological and pathological processes. If a very long exposure is contemplated, then all steps should be taken to insure that the patient is in a fit condition to stand the strain. A careful consideration of the pathologic processes at work, the condition of the neoplasm, the type of cell composing the bulk of its structure, and also that of the surrounding tissues, will in a number of cases rule out at once any hope of cure. The treatment then must become palliative, and in this group there is a large field for the radium therapist.

In former years it was thought that radium had a specific action upon cancer cells, rendering them innocuous, and allowing the tissues about to heal over the area. Recent work at the Rockefeller Institute has demonstrated that this is not true. What really happens is that radium produces stimulation of the adjacent tissues and lymphatics, inducing a mononuclear lymphocytosis about the area radiated. A fibrosis is thus produced about the cancer cells and they are rendered innocuous. From this theory one might deduce that all that was necessary in radium therapy was to administer repeated small dosages until the tissues had responded satisfactorily and the cancer cured. Unfortunately, this does not always happen,

and the beginner in radium therapy will occasionally be surprised to see a cancer suddenly becoming more extensive after it has been responding to treatment favorably.

The primary action of radium is that of stimulation to cell activity and tissue growth. Several tables estimating a lethal dose for each form of tumor have been made up. Seitz and Wintz, in their work on "Treatment of Cancer and other Tumors," propounded such a table, and they further stated that a dose short of the lethal dose, say fifty per cent of the estimated lethal dose, is a dose which will stimulate the neoplasm to renewed activity and growth. When a tumor is actively growing, it must be a difficult matter to say when it is actually stimulated by radiations. What appears to be a stimulated effect may after all be only an acceleration or growth independent of any extraneous stimulations.

We recall the laboratory experiments in our studies in physiology when the dissected gastrocnemius muscle of the frog was subjected to electrical stimuli. It responded vigorously for a time; this was followed by a period of fatigue. Continued stimulations resulted in exhaustion and death, the cause of death being due to "a summation of stimuli." Is it not reasonable to suppose that by the use of frequent small dosages of radiations the law of summation of stimuli comes into force? The cells are over-stimulated, and either die or become more vulnerable to the natural process of repair in the tissues and are overcome.

It was from such observations that the high-powered, high-voltage Coolidge X-ray tube has been developed, to deliver the maximum radiation to the patient in the shortest time, rather than a prolongation of the exposure time of repeated sittings to produce the lethal dose. This maximum dosage, accomplished nowadays by the use of the high-powered water-cooled Coolidge tube, tends to reduce irradiation sickness to a minimum. The lethal dose is that dose which stimulates the tissues to activity which will destroy the cancer cells by fibrosis. The sub-lethal dose might be described as that amount of radiations, from repeated small dosage at frequent intervals, which lowers the vitality of the tissues and stimulates the growth, resulting in further cancerous invasion.

Therefore, the successful treatment of malignancies resolves itself into the application of sufficient dosage at the initial treatment, to be repeated after a considerable interval, if necessary. In the first years of our experience in radium therapy we have seen numerous cases of malignant conditions, which we were treating with fractional doses, improve very satisfactorily over a period of several months, and then be equally surprised to see that a retrogressive change was taking place and that the final cure, which we had hoped for and expected, was not being consummated. Instead, an indolent ulcerative condition would appear, which has proved most stubborn to treatment. We infer from this experience that the tissues have been devitalized to such an extent that constructive reparation could not take place. Therefore, it has been our custom to resort to initial large dosages in the treatment of these conditions.

In the treatment of a cancerous condition, it is of vital importance that the radium be applied to all areas in and about the growth, and of these the base is of not the least importance. Thorough radiation of the base and adjacent tissues can be accomplished by mass removal of the growth by electro-coagulation, and then the radium applied. In some instances, for example carcinoma of the cervix with extensive involvement of the vaginal fornices, or extensive involvement of the cervical tissues over-lying the great vessels, in which cases electro-coagulation can not be resorted to, the use of radium needles or radium emanation seeds is resorted thereto. The method of implantation of the radium seeds into the growth is preferable, because they eliminate radiations over a period of approximately thirty days, during which the patient can be at home, which is quite an economic factor from the patient's standpoint, in that hospitalization during this time is not necessary.

To summarize, we might say:

1. The radium therapist should be equipped with a sufficient quantity of radium to be able to deliver maximum dosages at the beginning of the treatment, rather than to depend upon a summation of dosage over a prolonged time.

2. Repeated small dosages of radiations often result in an overstimulation and exhaustion of the tissues, lowering their vitality and rendering them favorable for further cancerous invasion.

3. Thorough radiations of all the tissues in and about the growth is an important measure and can be accomplished best by destruction of the mass of growth by electro-coagulation with subsequent radiation, or the implantation of radium needles or radium emanation seeds, preferably the latter, because of their prolonged action.

SECTION ON PEDIATRICS

B. U. Brooks, M. D., Chairman, Durham

PEDIATRIC POSSIBILITIES IN NORTH CAROLINA

Baird U. Brooks, M. D., Durham

The State of North Carolina during the past decade has made such progress in the various fields of endeavor that it reads almost like a fairy tale. During the past decade our state has risen from seventh to second place in the production of cotton. We rank second only to Massachusetts as a textile-manufacturing state. We rank second in the production of tobacco and first in its manufacture. We rank near the top as a producer of furniture. During the twenty-year period from 1899 to 1919 the value of our manufactured products increased from eighty-five million to almost one billion dollars, and our rank in the United States rose from twenty-ninth to fifteenth.

Along with our industrial progress there has been a corresponding development of our vast water power resources, there being at present about one million horse-power of water power. This has contributed largely to the industrial development of the State.

We are investing millions of dollars in improved highways throughout the state and as a result we are rapidly developing as a tourist and resort state.

This remarkable growth in agriculture, industry, water power development, highway construction, commerce, and as a tourist and resort state has made us come to realize that North Carolina is in deed and truth the Empire State of the South, and we propose that this progress shall continue in the future.

When I think of the vast progress that has been made and is being made in the various lines of endeavor in our state I frequently stop to view the situation from a medical standpoint, and more especially from a pediatric standpoint, and the thought constantly comes into my mind, "Are we as pediatricians keeping step with this vast progress or are we lagging behind?"

When we consult the statistics in matters pertaining to our work we find the following facts: In the year 1922, the last year in which complete statistics are available, there was a total of 7,996 deaths under two years of age, and a total of 9,085 deaths under five years of age. From all causes combined there were 30,660 deaths. About 33 1/3 per cent of the total deaths in the state in 1922 occurred in children under five years of age. A certain well known authority makes the statement that, in addition to this high death rate, at least one-third of all the children of the country are underweight for their height, undernourished or malnourished.

An impartial and serious study of these facts drives us to the conclusion that in some way we are not measuring up to the standards of progress set by other fields of endeavor in our state. It may be true that we are keeping pace with other states of the Union in

these matters, but so long as one-third of the deaths in our state occur in children under five years of age I am forced to the conclusion that we are losing many children who should be saved to the state.

If we concede the fact that our death rate among children is too high, let us seek to discover the cause of the trouble.

There stand out in my mind five factors which assume the greatest importance:

(1) Improper prenatal care.

(2) Lack of proper training in the care and feeding of infants.

(3) Lack of proper training in the care and feeding of the child of pre-school age.

(4) Lack of knowledge as to the seriousness of the various contagious diseases.

(5) Failure to observe the numerous signs of malnutrition, and failure to take proper steps to correct this malnutrition.

The death rate from improper prenatal care is alarmingly large. This is a question which is not properly within our sphere of activity, and yet it is one which should command our most serious study and consideration. It is no unusual occurrence, in my town at least, to find certain so-called obstetricians who see their patients only one time, that being the time of delivery. It is such care as this which brings our death rate from prenatal causes to such a high percentage.

It is little wonder that the infant brought into the world with no more care and consideration than has been mentioned should begin his career in a manner that is hazardous and one which jeopardizes his future existence. Such an infant is a child of fate and his future becomes a case of the survival of the fittest. The mother, on account of the careless indifference of the attending obstetrician, is led to feel that her infant is born to live or die, and that the life of her infant is a matter largely of percentage. She has not been taught to believe that the life and health of her infant are largely a matter of proper care and feeding.

So it is that, if this infant through the law of percentage of life and death, and through the law of the survival of the fittest, is so fortunate as to graduate from the infant class he passes then, "conditioned" on account of improper care, into the next class, the class of the child of pre-school age.

The mother, having been careless in the care of her infant, who through the grace of God has been spared from death from colitis and other infantile diseases, passes on into the next class even more careless than in the former. She has even less regard for the feeding, less regard for the proper rest periods, and is even less watchful for physical defects than she was in the infant stage.

She is so careless that when the various contagious diseases that so frequently attack children of this age become prevalent, she even welcomes these diseases. Indeed, in many cases she even seeks these diseases for her helpless child, feeling that she wants him to have them and get through with them while he is still young. She does not know that these are the critical years in the matter of health.

She does not know that 95 per cent of all deaths from measles and whooping cough occur under the age of five years, nor does she know that over 50,000 children die in America each year from the four leading contagious diseases, measles, whooping cough, scarlet fever, diphtheria, and that 70 per cent of this number die before they reach the age of five years. She does not realize that one-third of all deaths occur before the end of the fifth year.

It is not merely the actual death rate from these diseases which is important, for many children who survive them become malnourished, and the cause of this condition in many cases may be traced to attacks of these contagious diseases.

So long as such conditions exist as mentioned above, it is small wonder that our mothers fail to recognize malnutrition in their children until this malnutrition has advanced to such a point that it is almost hopeless. The mother having been observant in the matter of feeding and in the protection of the children from the various contagious diseases, which are so evident, we would scarcely expect her to observe that her child has become a mouth-breather from some upper respiratory obstruction, or that the child is nervous and irritable and much underweight for his height. These are things which must be brought to her attention by the sudden breakdown of her child, or by the school teacher, who informs her that her child is falling back in his school work. Then it is she seeks the physician to overcome the troubles which can properly be overcome only by avoiding them. Then it is she realizes that her child, on account of his physical condition, must go through life handicapped. Then it is she realizes that something has been denied her which rightfully belongs to her, the proper instruction in the care of her child when it is laying the foundation of a future life. It is the granting of this privilege which I feel is the pediatrist's possibility and obligation in this state.

Our late lamented Dr. L. Emmett Holt, in his presidential address before the American Pediatric Society in 1923, stated that to his view three distinct types of pediatrists would be needed in the future: First, the research man; second, the man who applies our best science in the treatment of sick children in the home, in the hospital and the dispensary; third, the public health pediatrist, who will organize and direct this special department in a state, or city, or county health board. It will be his duty to get over into the minds of the lay public and the general medical profession the latest and best which science has to offer. He must work with teachers and school authorities as well as with physicians.

On account of lack of facilities and the fact that few minds belong to the research class it will not likely fall to the lot of many of our group to develop along this line, but there is no limit to the possibilities which we may develop along the lines of the second and third classes. We are still, in this state, a small band of pioneers, in many cases fighting for existence, but with the proper courage and spirit and vision we may become a dynamic force in our state and in a large measure wipe out the high death rate among the class of patients to whom we have chosen to devote our life work.

Evidences of progress in these lines must necessarily be very slow in showing themselves, but it must be remembered that all great forces must move slowly. It must be our task to get the vision of the possibilities and become so inspired with this vision that we may direct the forces in the direction in which they should go.

This ultimately brings us back to a realization of our state's greatest need, namely: Education. To become a really great state this education must go forward equally in all lines, literary, industrial, scientific, and public health. Every public health program must fail unless it begins at the proper place, and the only proper place for this beginning is in the beginning of life. We have spent much time and thought and money in the curing of diseases, but the greatest of all public health work, to my mind, would be the building up of the infant and the child to such a point of physical stamina that the body becomes able to resist the onslaught of the diseases which beset us on all sides in later life. Great work has been done in our state in the cure of tuberculosis after it has been contracted, but would it not be much more logical to attack this problem where it has its inception, in infancy and childhood? And yet comparatively little has been done to aid our infants and children in their fight against this dread disease.

I feel sure that the large death rate in infancy and childhood could be markedly reduced if some measure could be devised to lessen the occurrence of tuberculosis at this period of life. Our statistics show various causes of death in infancy and childhood, but if the real truth were known, many of these deaths occur either directly or indirectly from a tuberculous infection which made these patients more susceptible to other diseases.

The best safeguard against tuberculous infection is a robust body, and until we are able to bring the mother to a realization of the fact that a robust body may be produced only by proper, watchful care and feeding of the infant and the child, our fight against tuberculosis will be in vain.

The problem then, as I see it, is one of education, education through the means of public health nurses and physicians, either voluntary or paid, just as seems best. The subject of infant and child health and hygiene must be taught in our schools to our growing girls and boys. We have fallen backward by our failure to teach the greatest problem of life, that of personal health, in our schools, and this, in my judgment, can be the only proper place to teach these things.

If our children are taught that health is the most vital thing in all life, and that to attain health one must begin in infancy, when they become mothers and fathers their first thought and only consideration will be the health of their infant.

Just what steps are necessary to carry forward such a program I am not prepared to say. It may be that the provisions of the Sheppard-Towner Act offer the best solution at present. Certain it is that this is a step in the right direction, and where there is no

organized health department doing constructive work in prenatal care and infant welfare the program set forth in this act should be carried forward.

It is my conviction and my desire that this Section should offer a resolution, sponsored by one hundred per cent of our members, offering our services in whatever capacity they may be most helpful to the State Board of Health in carrying out a program which has as its purpose the reduction of the death rate in infancy and childhood in our state.

I know not what the program may be, I know not what hours of toil or sacrifice may be required to carry out such a program, but this I know, that if such a program is launched with the unanimous support of this body, impelled by the spirit of unselfish service to the helpless infants and children of our state, it will have such an irresistible power for good that no man living may be able to predict its ultimate accomplishments.

USE OF WHOLE LACTIC ACID MILK IN FEEDING UNDERWEIGHT CHILDREN UNDER ONE YEAR OF AGE

Leroy J. Butler, M. D., Winston-Salem

In the past athreptic babies or babies with malnutrition under one year of age have been one of our most difficult problems in infant feeding. If we gave the baby a sufficient number of calories on which to gain we soon had an infant with diarrhea, vomiting, or some gastro-intestinal disturbance. Consequently the baby was given everything in the category of infant foods, with the hope that on some one of these formulas it would begin to gain. The doctor probably had an opportunity to try only two or three of these formulas; the mother with the kind assistance of her neighbors tried the remainder; as a result the baby usually went from bad to worse.

The cause of this condition was due to the fact that we were unable to give the baby a food well balanced, with sufficient calories, that would still be digestible.

For an infant to be successfully fed the food must meet certain fundamental requirements: (1) Sufficient calories; (2) Protein, carbohydrate, mineral salts, water and vitamines; (3) Freedom from harmful bacteria; (4) Digestibility.

In underweight or athreptic babies the intestinal tract and digestive glands are functionally weak, and consequently the digestion and absorption of foods poor. We are therefore confronted with the necessity of giving a high caloric feeding to a child capable of caring for a very weak food. A baby of six months, weighing ten pounds requires practically the same amount of food as a baby the same age weighing sixteen pounds, so in these cases we have to give as high as 80 or 90 calories per pound of body weight in order for the baby to gain.

From the experimental work of Marriott (1) it has been shown that the gastric acidity probably plays an important part in the digestion and nutrition of infants, and that a decrease in acidity is likely to be associated with gastro-intestinal disturbances.

For some time it has been observed that infants suffering from gastro-intestinal disturbances were able to take larger amounts of buttermilk than sweet milk, but this is a fat-free milk and low in caloric value, consequently not a food on which underweight babies will gain consistently. Then the use of whole lactic acid milk was tried with very satisfactory results, showing that very young babies could digest whole milk if acidified.

The reason advanced for this is that the normal acid of the stomach is hydrochloric, which is sufficient to acidify breast milk. Cow's milk is more difficult to acidify, taking about three times as much acid as does breast milk. If the milk is not acidified we do not get the proper stimulation of the digestive enzymes, and as a result we get a baby that spits up its food, has vomiting or diarrhea or some gastro-intestinal disturbance, so in the beginning we are usually forced to put the baby on a formula of diluted cow's milk.

According to Marriott (2) when cow's milk is soured by lactic acid its buffer substance is neutralized, that is the capacity to absorb considerable quantities of acid or alkali without much chemical reaction. When such milk is fed the gastric acidity closely approximates that when equal amounts of breast milk are fed. Hydrochloric acid would at first seem to be the natural acid to add, as it is the normal acid of the stomach, but unfortunately only a small amount of hydrochloric can be added safely because this acid is not destroyed in the body and must be eliminated, throwing a rather severe strain on the acid-base-regulating mechanism. Consequently a sufficient amount of this acid to acidify cow's milk would probably produce an acidosis. Lactic acid is free from any harmful effects, in reasonable amounts, and serves very well to acidify cow's milk.

There are two methods of preparing this milk, souring with lactic acid organisms or the addition of lactic acid to sterilized milk. In the first method whole milk is sterilized by boiling, cooling to room temperature, inoculated with a culture of Bulgarian Bacillus or other lactic acid-producing organism, and incubated over night.

The second method is made by boiling whole milk for five minutes and letting cool, then lactic acid is added slowly drop by drop, while the milk is gently stirred. Lactic acid U. S. P. is used, and the amount required is one dram to the pint.

In the last method we have practically a fool-proof milk, and it is a safe milk due to the fact that pathogenic bacteria will not grow in it and it can be made in a very short time by even unintelligent mothers.

To this milk some form of carbohydrate should be added, as there is an insufficient amount of carbohydrate present for the ordinary baby, although I have had several babies to do well on this milk without added sugar. The sugar I have used for the most part has been dextro-maltose, though in a few cases I have used Karo corn syrup. Marriott says that Karo corn syrup is the carbohydrate of choice, due to the relatively high proportion of the difficult fermentable dextrin and the cheapness of the article. The amount of carbohydrate used is from one to two ounces in a 24-hour feeding.

In the past five months I have tried this feeding on practically all underweight or athreptic babies under one year of age under my care, with very satisfactory results. The average gain in weight has been from 8 to 9 ounces a week. In a few extremely malnourished infants I had rather remarkable results. One baby, probably the worst of the lot, I saw at three months of age when it weighed four pounds. It was put on whole lactic acid milk, with the result that it has gained from 8 to 12 ounces each week since.

Three or four babies between 6 and 12 months of age I have had to put on some other form of milk, due to the persistent refusal of the child to take the lactic acid milk. This can partially be explained as due to lack of coöperation on the part of the mother. But as a whole the results have been extremely gratifying. I no longer stand with fear and trembling when I see an athreptic baby, because I feel that we have a milk from which we can expect results, and I am sure that in the future whole lactic acid milk will play a big part in infant feeding, especially in underweight or athreptic babies under one year of age.

References:

1. A. J. D. C., Dec. ?., 1923.
2. J. A. M. A., Dec. 15, 1923.

DISCUSSION

Dr. A. S. Root, Raleigh: Those of us who have visited Dr. Marriott's clinic and have seen what is being accomplished have begun feeding our infants with whole lactic acid milk and realize fully the value of that method of feeding. I am particularly glad that Dr. Butler has brought this question before the rest of the doctors, who have not given the babies the benefit of this method of feeding. The mortality in cases of athreptic babies is something over eighty per cent when they are treated in the usual way. I mean by the usual way that they are first put upon cow's milk, perhaps, and then condensed milk and all the various proprietary foods. Eighty per cent of these babies die of starvation or infections. Since Dr. Marriott has been using whole lactic acid milk in infant feeding the mortality has been reduced from seventy-six per cent to twenty-eight per cent, and that covers every class of case. As Dr. Butler says, these cases were most unwelcome, but the scene has been entirely changed since we have been using whole lactic acid milk, and I know of nothing in pediatrics that is more gratifying than to see these little starved infants blossom into rosy, healthy, normal children.

The question of lactic acid milk being fool-proof is a very important thing, because it can be used in the humblest home safely. A rather interesting experiment was tried by Dr. Marriott and his co-workers. In one quart of lactic acid milk, a pure culture of colon bacilli were placed; in another, dysentery bacilli; in a third quart, a part of the stool from a baby with infectious diarrhea. An examination of these three specimens of milk twenty-four hours after they were inoculated showed that there were none of these organisms

present, the only organisms being the lactic acid bacilli. That is pretty good evidence that it is fool-proof. I think it is a very happy thing, too, in the feeding of whole lactic acid milk to these infants, that you can forget the algebra and geometry that you have to use in making up infant formulas. Dr. Marriott feeds these babies on undiluted whole lactic acid milk, no matter what age they are, and Karo corn syrup, containing about fifty-five per cent of dextrin is added, about two ounces to a pint. He feeds them as much as they will take in twenty-four hours. He makes the point that breast-fed infants get the same strength of mixture from the time they are born until they are weaned. His experience has been that these infants fed on whole lactic acid milk do perfectly well.

I think that this is a very timely paper, well presented, and I hope that every man here will put his malnourished infants on lactic acid milk in this way.

USE OF SERUM FROM CONVALESCENT MEASLES PATIENTS

Spencer P. Bass, M. D., Tarboro

An epidemic of measles occurs in a rural or semi-rural community whenever sufficient non-immune children have reached the school age. The interval between epidemics is usually from three to five years, though in more populous communities the interval may be less. The extent of the epidemic is dependent upon the interval.

Protection against measles is protection during the epidemic, for sporadic cases are few.

Quarantine and inspection of school children have little or no effect upon the ultimate spread of the disease. Preventive measures can be applied only to the individual. Until recently, in order to avoid measles it has been necessary to have the child removed to a community in which measles was not then prevalent or to sever relations with all other children.

It is desirable to protect children under five years and more than six months, for this is the age period in which the mortality is greatest. Older children who are weak because of recent illness or from other causes should be protected. The value, as a prophylactic, of serum from convalescent measles patients, first used by Nicolle and Conseil, has been well established. This gives us a means by which we may protect, with a fair degree of certainty, those in most need by inducing passive immunity.

In February, 1923, at the beginning of an epidemic, I secured blood from young adults convalescing from measles and sent it in vacuum tubes to one of the commercial laboratories, where it was tested for sterility and put into syringes as diphtheria antitoxin is dispensed. I gave this serum in doses of 5 to 10 c.c. to fourteen children. In one instance I drew the blood from a convalescing child whom I knew to be otherwise healthy and, as soon as it had coagulated, injected the serum without testing into his younger brother. This child was protected and is included in the fourteen

cases mentioned. So small a number of cases is not conclusive evidence of its value, but these cases illustrate the facts proven by observers who have had a large number.

One child developed measles two days after the injection and another within five days. The disease was unmodified. Another child developed measles two months after the injection and it was of average severity. Another developed measles at the end of the fifth week and had an exceedingly mild case. I am unable to attribute its mild nature to the serum, though some observers have reported such modified cases. The remaining ten did not contract the disease, though all were probably exposed and several played on the beds with patients in all stages of the infection. More than 2000 cases have been collected and reported, in which the failure to protect was three per cent.

The blood must be collected, preferably from adults and older children in good health, not later than the fourteenth day after the fading of the rash, as it soon loses some of its antibodies, though some observers state that it may be used later than this. The time of choice is about the fifth day. It should be taken from several patients and mixed, though the blood of one person may be used with success. It is not apt to be successful if given more than 5 or 6 days after exposure. It is possible that the administration of large amounts, 30 to 40 c.c., might be effective if given as late as the seventh or eighth day after exposure.

The immunity produced, being passive, does not protect longer than sixty days, and in many cases a much shorter time, as illustrated by the case at the end of the fifth week. In order to give longer protection the dose must be repeated within four weeks. This I did in one case. No patient showed any ill effect from the serum and there was no urticaria following the injection.

The value of this procedure is beyond question. In some of the well known children's hospitals a supply of serum is kept ready, in order that the children in contact with unexpected cases of measles may be immunized.

It can not be used as a public health measure in large numbers, though both in this country and in Europe the collection of large supplies of serum has been advocated.

It has its limitations, but we should give convalescent serum to those children who in our judgment are unable to withstand measles, until some safe means of producing active immunity to measles virus is found.

DISCUSSION

Dr. W. C. Verdery, Fayetteville: Considerable has been written recently on the serum treatment of measles, and an article by Dr. Zunger, who is with the Department of Health in New York City, has given a very complete survey of it. I have used this serum in only three cases, on children who had been exposed for four days immediately after diagnosis had been made. In some of these cases that you see you are not called until the fifth or sixth day, because the child does

not show eruption. I believe most authorities say that the eruption appears in about four days. I don't believe that it is absolutely correct in all cases, because sometimes a child gets sick and stays sick for five or six days before the eruption appears. However, you have your koplic spots and blood picture to go by, and if you can get an injection of citrated blood, or uncitrated blood, or serum immediately, the quicker you get it in the better results you will have and the less serum you have to give. Dr. Zunger, in his paper published a few days ago, has been endeavoring to protect the infant under five months old. As you know, an infant exposed to measles under five months old does not as a rule contract the disease, and, working upon that basis, he has attempted to take the nasal swab of an active case of measles and put it in the nasal cavity of a five-months-old baby; then protect him passively by injecting 2½ to 3 c.c. of convalescent serum. This, however, has not given the results that convalescent toxin has, or the toxin-antitoxin, as in the serum.

I do not agree with Dr. Bass on the question of public health. I don't think that we can omit the inspection of school children and the contacts. I do believe that when the child goes to school, around its sixth or seventh year, it is absolutely a hotbed for contagious diseases. I believe a rigid inspection of school children would assist us somewhat in holding down an epidemic of measles. It is true that in its beginning, and in the contagious stage, we oftentimes miss our diagnosis, but I don't think that we should do away with our public health question. I think that is a very important one to us.

Now, to obtain the blood in these cases is generally very hard to do. You take a five or six or seven-year-old child who has measles, and the mother doesn't like to have a needle stuck in the child. By the way, it is a rather difficult thing to do sometimes, to secure a vein sufficiently large from which to obtain the blood. If you can find an adult with measles when you have an epidemic of measles, then obtain a sufficient amount of blood from that patient, provided the blood is all right, to get a sufficient amount of serum to protect the children. Getting the blood from the father or an older brother, or some one like that, would be an ideal way to obtain a sufficient amount of serum to protect that family and families adjacent.

Dr. J. B. Sidbury, Wilmington: I am interested in this particular line of therapy and in the point that Dr. Bass brought out, that the serum is not accessible and you can't get it from the drug stores. The method we employed was to sterilize an eight or ten ounce bottle, take it to the home or wherever the patient may be, and get the blood. We fortunately had a number of adult patients that had measles, and in that way we were able to get enough serum to inoculate between fifty and sixty children during this epidemic. My experience coincides with the experience related by Dr. Bass. I have been gratified at the results we have had; it has been practically one hundred per cent certain. I have collected serum from patients from seven to twenty-one days after the fever had left them, and in whom there were no complications, and the doses I have given have been from five to twenty c.c. I soon realized

that amount of serum was too much if we expected to have enough serum for many cases, and my idea was to find out how little was necessary. I think the Health Department of New York has given three to five c.c. to children under two years of age.

There was one case of a child who came home sick and later developed measles. There were no symptoms in the other children. One sister went in the room for about three minutes, when the mother was undressing the child. I hoped at the end of two weeks that if the sister did not show any symptoms she was going to escape. When the first child began to show any kind of eruption, we hadn't suspected measles at that time at all. I gave the sister whole blood intra-muscularly. She had fever that night and the next day, a little more fever the next day, and on the following day broke out with a very mild case of measles. Of course, there are no deductions; she might have had a mild case anyway. I knew she had been exposed but hoped she might not get it. The other two children in the same family escaped.

One other child I feel was the only exception in the fifty cases I treated that developed measles. This child, one of twins seven years old, was given 10 c.c. of serum on the fifth day after exposure. Both of the twins were given the same amount. On the seventeenth day after the exposure and after the serum was given, the boy developed a fever of 103 and had some spots in his mouth and probably some spots on his face. The next day he was normal and had no more trouble. His brother escaped infection. Due to this exposure, two other children were brought to me on the seventh day. That is, the nurse had these two children in her arms on Tuesday and one broke out with measles on Wednesday. On the following Monday the other two children were brought to me and I inoculated them, seven days after they were exposed. I told the mother I thought that was the border line and the children would probably develop measles, but I would advise that they have the injection. To the boy, three years old, I gave 17 c.c. of serum, and to the little girl, two years old, I gave 13 c.c. Both of them escaped. It has been now one month since they had the injection. At the end of three weeks they were all right and had no symptoms.

In the series of fifty cases, I considered that only one developed measles, and she had a very mild case. I feel that it is a very definite addition to our treatment of measles, and that it is going to be a life-saver for our feeble children. You know definitely you can keep a child from taking measles if you give him the serum within seven days after he has been exposed. I feel very much pleased with the results I have had.

Dr. H. H. Harrison, Asheville: I haven't had any experience with this serum, but this certainly is an interesting subject. It strikes me it is a thing we should all know about, and it seems to be a pretty simple thing. All of us have children occasionally for whom an attack of measles would be a rather serious thing, for example, children with tuberculosis, nephritis, and diabetes. The knowledge of this method of prevention would certainly

be worth a great deal. For instance, if there is a child with tuberculosis, and his older brother has measles and gets well, get some of his blood and inject it into the child; it is a simple and most useful procedure.

Dr. Bass, closing the discussion: I appreciate the generous discussion, which has added much to the brief paper which I read. I do not want to leave the impression that I am advocating abandoning inspection of school children during measles epidemics. I simply mentioned the fact that inspection of school children and quarantine do not have much effect upon the ultimate spread of measles. They probably delay the spread, enabling us to keep tab on it, but it is practically impossible to check an epidemic by school inspection or by quarantine, because the disease is so infectious—and most infectious in its early stages before it is recognized at school. The impression which I wish to convey is that we as private physicians should encourage school inspection, but that our particular province is to protect the weak children under our care. Inspection of school children does not protect the child in the home, particularly the weak child, from contracting the disease. His brothers and sisters go to school and get it and bring it home.

Dr. Sidbury has added a good deal to the discussion. He gives the serum in smaller doses than I. This work of mine was done a year ago and I went on the basis which was advocated by men at the Mayo Clinic, that 5 c.c. was the minimum dose. A good many reports since then indicate that 2½ c.c. may be successfully used in small children.

CLOTHING FROM THE PEDIATRIC STANDPOINT

Lewis W. Elias, M. D., Asheville

This paper is not the result of scientific experiment or detailed research on the part of the writer. To come at once to the point, it is a plea for fewer clothes and more sunshine.

Consider first the objects for which clothes are worn—they are in general, three:

1. For protection from the elements;
2. Out of regard for the demands of society:
3. To satisfy the dictates of fashion.

The last two requirements scarcely operate in the case of infants, and only to a limited degree in young children, so that our chief consideration will be in regard to the clothing of infants for protection.

The science of heating and ventilating houses has changed radically since a generation ago, but customs which have a medical bearing are lagging behind in this progress. Formerly houses were heated by open fires and the atmosphere of the room often was a slightly tempered, semi-arctic one in winter. During this period there was some possible excuse for the varied collection of clothes, flannel and other undergarments, placed on the baby, and for the huge pile of blankets beneath which it was buried. But with the coming of furnace-heated buildings, our houses in winter are uniformly warmed to a rather mild summer temperature or above, and there is no more need for

the arctic dressing of infants which once obtained than there would be during mild summer weather. Therefore, the sensible method for dressing infants in furnace-heated houses during the winter would be to use the same clothing which would be suitable for a summer climate, say of 70 degrees. The bed clothes for a baby under these conditions should be light. Indeed, it is surprising how little cover these infants really need. Forgetting the season of the year, probably the sensible way to determine their requirements, of clothes, of covering and as outside wraps, is to consult the thermometer instead of the almanac.

When the baby is taken out of doors appropriate wraps should be added, instead of thicker underclothes, since the wraps will be removed on coming indoors, while the underclothes will not, and the overheating from the heavy clothes in the house causes cold clammy skin and extremities, producing respiratory diseases and general depression of the system. Of course, in the heat of summer the nearer nude the baby is the greater its comfort, and the better its chances of withstanding the sultry weather. All the measures recommended may be rapidly accomplished if a graded rather than a sudden change is made, and if the patient is properly supervised.

Turning now from the mild needs of the infant in the way of clothing in our modern houses, let us look at the subject from another angle. Latest views on ventilation, together with the accumulating results of scientific investigation, are teaching us to dispense with more and more of even the clothing which has been suggested. According to recent authoritative views, good ventilation consists in providing pure air, in motion, with sufficient moisture and, even more indispensable, if possible, variability of temperature. Of course, this is secured most easily in the open air. According to this view of the subject, drafts are not to be avoided but at least to a certain extent they should be sought for, as for example by placing the baby between an open door and window, or between two windows, that the air reaching it may be freely flowing. Again, if variability is so indispensable, then a uniform temperature is a detriment instead of a help. These views have encouraged many men to give their small patients a more liberal outdoor life.

Is it not strange that we should have been so slow in realizing the fact that the growing human organism demands sunlight just as does the growing vegetable life? Why we should have classed the animal body with noxious and shade-loving plants seems at this time rather odd.

Be this as it may, following fast on the heels of the improvements from outdoor living are the increasing proofs that exposure of the body to the direct rays of the sun not only prevents many diseases, but even rapidly cures some of the maladies which have been most difficult to handle. Rolleir is curing thousands of children of glandular and bone tuberculosis by exposing their naked bodies to the direct rays of the sun. This, too, in all kinds of temperatures, from summer weather to winter temperature far below zero. These achievements are being duplicated by other workers in various parts of the world. In America the State of Connecticut has probably been most

forward in this line of work, and with remarkable success. There tuberculous children have rolled their naked little bodies in the snow or have been placed on the seashore in the heat of summer until they were browned beyond recognition, and health has come back to them in a more pronounced and speedy way than by any of our former known methods.

As for rickets, we have recently learned two things—first, that children who live out-of-doors in the sunshine are immune to rickets, and second, those who under adverse circumstances have acquired the disease are rapidly cured by simply exposing them to the sun's rays. Hess found that young rats kept in the sunshine would not develop rickets even though fed on a ricket-producing diet. Hess further found that calcium is stored up in the body abundantly during the summer season when children are most out-of-doors, while during the winter and early spring we find them suffering from those diseases associated with a definite deficiency of calcium. Sunshine has also been shown to assist the body in taking up phosphorus; and more and more evidence is accumulating to show that direct sunshine on the growing organism of the child is as essential as it is in the growing plant, and in diseased conditions even more than in health.

A case in point is that of a two-year-old child with tuberculous peritonitis, referred to Asheville from Johns Hopkins Hospital by Dr. Howland, and with a bad outlook. The appearance of the child justified the prognosis. Extremely weak and emaciated, with distended abdomen containing large tuberculous masses, the appetite was poor and the digestion at a low ebb, so that he had been placed on buttermilk for an indefinite period. During the first two weeks after he arrived in the heat of early summer, he had two or three digestive upsets, with vomiting and diarrhea, that nearly carried him off. Heliotherapy was begun and rapidly pushed, as he tanned easily. His response was slow at first; then his general condition began to improve steadily. By late fall he was playing in the sunshine, nude, by the hour, looking more like a husky, darkskinned mulatto than like a white child, but so well that he went home by midwinter, entirely normal except for a small tuberculous mass in the abdomen, which had disappeared in the spring. In the several succeeding years he has remained an unusually robust boy, free from any return of tuberculosis.

A somewhat different case was that of the seventeen-months-old baby of a mother who had advanced pulmonary tuberculosis. All tests for tuberculosis in the baby were negative, yet for five months it had not gained, though it had a fair appetite, was taking good food under the care of a trained nurse, and was carefully handled in the best hygienic surroundings. Heliotherapy was begun, and by the time the knees were reached the baby began to gain in weight and maintained an average of one-half pound a week for the four months of treatment before returning to New York. But the greatest gain was in the ruddy complexion, the rounded limbs, and the exuberant vitality which the mother suggested when she said that whenever she saw a pale baby she wanted to get its clothes off and put it in the sun. Her own baby played out-of-doors on the coldest winter days we had,

wearing only a diaper, and refused to tolerate anything on cold nights except a thick night garment with a sheet for covering, while sleeping between two open doors. Her companions with thick wraps had colds and bronchitis, at which the baby laughed in good-natured wonder. She herself was never so happy as on a brisk winter day in the sun with all of her clothes off.

From the foregoing arguments, our fear of exposure of the child's body to the elements is beginning to appear ill-founded, and instead of defending children from the sun and wind as from an enemy, we should, by graded methods, reduce the clothing and expose them more and more to the out-of-doors as to beneficient friends. In our care of children and advice to mothers let us not follow custom, but, in the light of the new and promising facts that science is revealing, let us take as a generally helpful suggestion in working out these problems for our little patients "Less clothing and more sunshine."

DISCUSSION

Dr. LeRoy J. Butler, Winston-Salem: I would like to say I enjoyed Dr. Elias' paper very much, and I think the question of proper clothing, sanitation and fresh air is one we probably all have to deal with in a certain class of patients we have to attend. The question of proper clothing is quite a serious problem with a good many of us, because we can't make the mother understand why flannel, greasy flannel, should not be worn during the winter. It is also very difficult to make her understand why the windows should be open at night. It is quite a proposition with which to deal. I do feel that the question of clothing and fresh air needs attention. I think that comes particularly under your paper, Dr. Brooks; that we should try to bring this class of people in some way to understand the beneficial effects of proper clothing, sanitation and fresh air.

Dr. W. C. Verdery, Fayetteville: I would like to ask Dr. Elias what is the effect of the sun on the negro and the Italian.

Dr. Elias, closing the discussion: Answering Dr. Verdery's question, as to the effect of the sun on the negro and the Italian —they are the ones I had in mind. In their native country they seldom have rickets; it is when they come over here and settle in our slums and tenements that they develop it. That led to the idea that the sun has something to do with the reduction of rickets. Put these children out in the sun and they get well. Of course, where you haven't the sun you can use a quartz lamp. At Johns-Hopkins last fall they were using it, and they could cure a case of rickets with about equal speed with sun or lamp. Of course, it is more expensive, and there is no use using it unless there isn't any sun, though occasionally you find the sort of person who thinks that sunlight is too cheap. The thing I want to stress is the value of sunlight in any climate. People come to Asheville for the sake of our climate, put up in one of our good hotels, shut all the windows,

and contend that the child isn't getting any better. How can they expect it to get well when they don't use our atmosphere? We are all the same way. We shut our windows in the winter and pull down the shades and keep our children from the very elements that have been proved to be indispensable to their growth.

BLOOD TRANSFUSION IN MALNUTRITION IN INFANCY REPORT OF 40 CASES

Albert Smedes Root, M. D., Raleigh

During the past eight years articles upon blood transfusion in states of malnutrition in infancy have appeared in medical literature. Fischer (1), Kerley (2), Lowenberg (3), Robertson, Brown and Simpson (4), Burk and Fischer (5), have reported series of such cases. While these and other papers have helped to focus attention upon the value of blood transfusions in this type of case as a most valuable therapeutic measure, it is undeniably true that there is not the wide recognition nor practice of this therapy which the results justify. It is true that in hospitals connected with the larger institutions of teaching the value of blood transfusion is fully appreciated, and they are routinely performed, but in the smaller cities it is seldom that this obtains. In the latter case the pediatrician will be the only one who can properly determine the indications for it, consequently he should be prepared to perform this relatively simple operation.

The types of cases of malnutrition for which blood transfusion is particularly indicated are (1) those babies who either in the course of or following diarrhea have reached a stage of an hydremia from loss of fluid from the tissues, and (2) cases of athrepsia. Under the first head, acute diarrhea with co-incident rapid loss of weight, fever, often a complicating acidosis due to failure of the kidneys to excrete acid phosphate, and protein concentration of the blood serum are features which characterize the illness. Under the second head are those infants who are in state of starvation due to an abnormal condition of the gastro-intestinal tract, as a result of which food administered is not absorbed. Marriott (6) describes with great clarity some phases of the pathology of these two conditions in his Harvey Lecture, 1920-1921. In 39 of the 40 cases reported in this paper citrated blood by way of the superior longitudinal sinus was administered.

Citrated blood has been objected to because of reactions following its use. Sydenstricker, Mason and Rivers (7) reported 17% of their cases having reactions, Lewison (8) 20% in 200 cases, Pemberton (9) 21% in over 1000 cases, Drinker and Brittingham (10) 60%, and Clough and Clough (11), in 214 cases collected, found 32% showing reactions. These reactions have been ascribed to a number of causes, viz., injury to the red blood cells by the citrate, liberation of toxic substances from the blood platelets (10), incompatibility of platelets, and changes in the cellular elements (12). No very definite evidence substantiates these hypotheses.

Of the 40 cases reported, seven, or 17%, showed a reaction following transfusion. In one of these cases there was some agglutination of donor's and recipient's red blood cells, but the transfusion was performed as an emergency measure and as a result there was a violent reaction. In the other six cases, the temperature was elevated approximately 2° F. for four to eight hours, but with no other symptoms.

The more thorough the compatibility tests made of donor's and recipient's blood prior to transfusion, the less likely will reaction take place. In 35 of the 40 cases reported such tests were made, the others in the series being regarded as emergency cases. In none of the latter, however, did a reaction follow. In the 35 cases where compatibility tests were made, the bloods were either grouped or were examined for agglutination under the microscope in dilutions of 1 to 9 parts, equal parts, and 9 to 1 parts of the donor's and recipient's blood respectively.

The superior longitudinal sinus has been condemned by some, on the ground that it might be transfixed in the operation, because the sinus might be ruptured by the undue force of the inflowing blood, that it might be difficult to enter on account of an anomalous position, etc. None of these views are tenable. It is important that the blood should be injected slowly if the syringe method is used, or that it should be given by gravity.

The amount of blood to be transfused varies with the degrees of anemia and anhydremia present, but the maximum amount given up to 15 or 18 months of age should be equivalent to not more than 15 c. c. per pound of body weight. Smaller transfusions, repeated if necessary, are probably more effective. The researches of Ashby (13) seem to indicate that the time taken for the elimination of transfused red blood cells varies from 33 to 100 days. This being true, it is readily seen that these babies are tided over the critical period for a considerable length of time by the new blood administered.

The technique of the operation varies with the several methods used. In these cases the citrated blood was administered by the use of 20 c. c. record syringes, one syringeful of blood being given while another is being filled by an assistant or nurse. 10 c. c. of a 2½% solution of sodium citrate in freshly distilled water was used with each 90 c. c. of blood. It is important that the water should be freshly distilled and that the citrated blood should be kept warm. In most of the cases a Goldbloom (14) needle with aluminum block was employed. This device, however, is not necessary.

Following is given a very brief resume of each case:

Case 1. Baby Y. Age 13 months. Diagnosis: Infectious diarrhea and acute otitis media. Baby ill for two weeks with diarrhea—15 to 20 bloody stools daily. Fever. Loss of weight and strength. Vomits all feedings. Wt. 14 pounds. Acutely ill, constantly rolling head and whining cry. Skin dry and wrinkled. Few räles over both sides of chest. R. B. C. 3,000,000; Hb. 50%; W. B. C. 9,000. 180 c. c. citrated blood. Father donor. No agglutination. No

reaction. After transfusion R. B. C. 4,304,000; Hb. 65%; W. B. C. 9,200. Takes and retains feedings of lactic acid milk and Karo syrup. Discharged three days later much improved.

Case 2. Baby S. M. Age 7 months. Diagnosis: Fermentative diarrhea (with intoxication). Has had frequent loose green, acid stools for 2 weeks. Wt. 9½ pounds. Stuporous. Tissue shows marked water loss. T. 102; P. 140; R. 40; R. B. C. 4,000,000; Hb. 75%; W. B. C. 11,000. 70 c. c. citrated blood given. Father donor. No agglutination. No reaction. After transfusion R. B. C. 4,500,000; Hb. 85%; W. B. C. 15,000. Placed on lactic acid milk and Karo mixture. Improvement at once and uninterrupted convalescence.

Case 3. Baby M. M. Age 3 months. Diagnosis: Athrepsia. Has never thriven. Artificially fed with Dryco, cow's and goat's milk. Vomits feedings. Wt. 7¼ pounds. Typical picture of starvation. Skin mottled and cyanotic and in folds. Practically no subcutaneous fat. Transfused with 100 c. c. citrated blood. Brother donor. No agglutination. No reaction. Lactic acid milk alternating with thick cereal gruel feedings. Gradual improvement. Weight after a year 19 pounds.

Case 4. Baby S. M. Age 8 months. Diagnosis: Infectious diarrhea, purpura hemorrhagica and pyelitis. Infectious diarrhea began 5 weeks ago. Rapid loss of weight. Stools still frequent. During past four days has been passing blood—red urine and tarry stools, and ecchymotic spots on skin of extremities and body have appeared. Weight 11 pounds. In stupor. Skin pale, with ecchymotic spots over extremities and body. Pulse weak and rapid. T. 102. Ulcerative stomatitis and gingivitis. Urine, much blood and pus microscopically. 90 c. c. citrated blood given in superior longitudinal sinus. Father donor. No reaction. On day following transfusion urine clear and yellow. Ecchymoses rapidly faded. Gradual improvement. After three weeks a second transfusion of 50 c. c. citrated blood given. Convalescence rapid. Gained 4 pounds in 2 months.

Case 5. Baby R. F. Age 4 months. Diagnosis: Fermentative diarrhea (with intoxication). Nursed 1 month, then condensed milk. Diarrhea for a month. An anemic, very poorly nourished infant in a moribund state. Emergency transfusion of 60 c. c. citrated blood. No reaction. Baby died on the following day.

Case 6. Baby P. F. Age 19 months. Diagnosis: Infectious diarrhea, pyelitis and acute otitis media. Has had 20 to 30 loose bloody stools each day for 8 days. For 2 days has refused all food. Wt. 15 pounds. Emaciated; flabby muscles; dessicated skin and mucus membranes. Ulcerated gums. Both ear-drums bulging. In stupor. T. 104. 150 c. c. citrated blood given. Aunt donor. Both donor and recipient in Group 1. No reaction. Urine contains much pus. Both ear-drums opened. Before transfusion R. B. C. 4,000,000; Hb. 55%; W. B. C. 7,200. After transfusion R. B. C. 4,500,000; Hb. 67¾; W. B. C. 8,600. Lactic acid milk and Karo taken and retained. Improvement at once. A gain of 1 pound 3 weeks after transfusion.

Case 7. Baby C. F. Age 3 months. Diagnosis: Fermentative diarrhea and acidosis. Vomiting and diarrhea for 2 weeks. Baby moribund. 80 c. c. citrated blood given. Mother donor. No reaction. No response, and baby died one day after transfusion.

Case 8. Baby J. F. Age 13 months. Diagnosis: Malnutrition, secondary anemia and pyelitis. Baby has had only breast milk since birth. Has been vomiting everything for the past 3 days. Has had fever. Wt. 15 pounds, 2 ounces. Skin very pale and waxy. State of nutrition poor. Apathetic. T. 105 F. Urine shows much pus. R. B. C. 1,400,000; Hb. 20%; W. B. C. 8,000. Baby transfused with 150 c c. citrated blood. Father donor. Both in Group 1. No reaction. After transfusion R. B. C. 2,350,000; Hb. 35%; W. B. C. 9,600. Temperature 2 degrees lower day after operation. Takes lactic acid milk mixture and retains it. 10 days after operation Wt. 16¾ pounds, a gain of 1 pound and 10 ounces.

Case 9. Baby R. F. Age 13 months. Diagnosis: Infectious diarrhea, acidosis, acute otitis media and pyelitis. Ill 6 days with diarrhea,—bloody stools every half hour. Baby very toxic and in a state of collapse and showing a marked state of anhydremia. Air hunger. T. 105; P. not obtainable; R. 40. Abdomen distended. 50 c. c. citrated blood given. Friend donor. No agglutination. No reaction. General condition improved for next 12 hours, but baby died 2 days later.

Case 10. Baby M. F. Age 2 years. Diagnosis: Infectious diarrhea. Has had diarrhea for 6 weeks. Rapid loss of weight and strength. Refuses nourishment. Feet, legs, eyelids much swollen (nutritional edema). Wt. 17 pounds, 12 ounces. Pale, flabby, listless. Perceptible degree of rickets. R. B. C. 2,750,000; Hb. 65%; W. B. C. 15,000. 180 c. c. citrated blood given. Father donor. No agglutination. No reaction. Immediate improvement. Retains lactic acid milk. Gain of 2 pounds in 3 weeks.

Case 11. Baby A. F. Age 15 months. Diagnosis: Malnutrition in the course of focal hemorrhagic encephalitis. For 4 weeks has been in a comatose state. Wt. 16¾ pounds. Very pale and poorly nourished. R. B. C. 2,600,000; Hb. 35%; W. B. C. 5,000. 60 c. c. citrated blood administered. Mother donor. No agglutination. No reaction. After transfusion R. B. C. 3,000,000; Hb. 43%; W. B. C. 6,500. Recovery.

Case 12. Baby P. M. Age 10 months. Diagnosis: Athrepsia and acute otitis media. Baby has never gained weight. Feeding: Breast milk alternating with Nestle's food. Wt. 8¾ pounds. Greenish pallor; skin in folds. Right ear-drum bulging. 150 c. c. citrated blood introduced into the superior longitudinal sinus. Father donor. No agglutination. No reaction. Lactic acid milk and Karo feedings. Improvement at once. 5 days after transfusion wt. 10 pounds 3 ounces; a week later 11 pounds 14 ounces.

Case 13. Baby C. M. Age 22 months. Diagnosis: Infectious diarrhea and acidosis. Very acutely ill for 3 weeks. Frequent bloody stools. Has been vomiting milk and water for 2 days. A very toxic infant in state of collapse. Air hunger. T. 103. Baby transfused with 180 c. c. citrated blood. Father donor. No agglutination. Slight reaction for 6 hours after the operation, the temperature being increased 2 degrees. On the following day after transfusion no dyspnoea. Pulse volume good and general appearance much better. Takes and retains lactic acid milk and Karo mixture. Steady and complete convalescence.

Case 14. Baby M. M. Age 4 months. Diagnosis: Fermentative diarrhea with intoxication and pyelitis. Baby has been having 15 to 20 loose green stools

daily for 12 days. For past few days has lain in state of stupor, refusing all feedings. Physical examination revealed a very malnourished infant apparently in a dying condition. Emergency transfusion of 55 c. c. citrated blood given. Father donor. No reaction. Apparently improved for 24 hours, but died on 3rd day after admission to hospital. Before transfusion R. B. C. 3,000,000; Hb. 55%; W. B. C. 22,000. After transfusion R. B. C. 4,000,000; Hb. 65%; W. B. C. 17,000.

Case 15. Baby B. F. Age 3 months. Diagnosis: Fermentative diarrhea (with intoxication). For a month has been having loose green stools and temperature, which has ranged between 100 and 102 degrees. Wt. 9 pounds; fairly well nourished, though pale and flabby. Buccal mucous membrane and tongue covered with thrush. Placed on lactic acid milk with no improvement. After 2 weeks 60 c. c. citrated blood was given. Father donor. No agglutination. No reaction. From this time baby began to improve and to gain in weight.

Case 16. Baby L. F. Age 7 weeks. Diagnosis: Malnutrition and pyloric stenosis. Rammstedt operation at age of 7 weeks. 24 hours after operation collapse. 60 c. c. citrated blood as emergency operation. Father donor. No reaction. Immediate improvement and convalescence uninterrupted.

Case 17. Baby B. M. Age 13 months. Diagnosis: Infectious diarrhea, diphtheria, otitis media. Ten days ago developed infectious diarrhea, with 20 to 25 bloody stools daily. 4 days after admission faucial diphtheria and both ear-drums bulging. 10,000 units diphtheria antitoxin administered intramuscularly and paracentesis both drums performed. Membrane disappeared after 4 days and baby discharged. At this time only 4 bowel movements daily. Readmitted 6 days later with exacerbation of diarrhea. Extensive furunculosis. Refuses milk. Wt. 14 pounds. Condition very bad. 100 c. c. citrated blood given. Father donor. Donor and recipient in Group 1. Slight reaction; temperature 2 degrees higher for several hours. Before transfusion R. B. C. 3,000,000; Hb. 45%; W. B. C. 9,000. After transfusion R. B. C. 4,500,000; Hb. 55%; W. B. C. 9,200. General appearance and character of pulse showed decided improvement and baby retained lactic acid milk. Convalescence uninterrupted, with complete recovery.

Case 18. Baby W. F. Age 5 weeks. Diagnosis: Athrepsia. Breast fed. Has never gained and has vomited since birth. Had large abscess over the sacral region which appeared shortly after birth and only healed a week ago. Wt. 6½ pounds. R. B. C. 2,750,000; Hb. 40%; W. B. C. 12,500. 60 c. c. citrated blood. Cousin donor. No agglutination. No reaction. Sent home improved after a week, during which time gained one-half pound.

Case 19. Baby B. F. Age 3 months. Diagnosis: Fermentative diarrhea (with intoxication) and furunculosis. Has had diarrhea 6 weeks, and furnuculosis scalp, body and extremities for 3 weeks. Has been in stupor for a week, refusing nourishment. Wt. 9 pounds. T. 103, radial pulse not obtainable. Very toxic and unconscious. Skin mottled and cyanotic. 100 c. c. citrated blood administered. Mother donor. No agglutination. No reaction. There was no improvement after transfusion and the baby died 2 days after admission to the hospital.

Case 20. Baby S. M. Age 8 months. Diagnosis: Fermentative diarrhea. Baby has been having frequent loose green stools for 4 months. More frequent

in the past 2 weeks, with loss of weight and strength and anorexia. Wt. 9¼ pounds. Much emaciated and anhydremic. Transfusion of 90 c. c. citrated blood. Father donor. No agglutination. No reaction. Klim milk mixture prescribed. Recovery with a gain of 2½ pounds in a month.

Case 21. Baby B. F. Age 18 months. Diagnosis: Malnutrition, secondary anemia and stomatitis. Baby had had nothing but breast milk since birth. Refuses everything else. Has gradually become thinner and paler. Wt. 15¼ pounds. Skin pale and wrinkled, with little subcutaneous fat. Rachitic rosary and Harrison's grove and enlarged epiphyses. Severe stomatitis and gingivitis. Liver and spleen much enlarged. R. B. C. 1,150,000; Hb. 25%; W. B. C. 10,000. 200 c. c. citrated blood. Father donor. Both in Group 1. No reaction. After transfusion R. B. C. 2,400.000; Hb. 40%; W. B. C. 11,000. Lactic acid milk, orange juice, codliver oil prescribed. There was a gain of 2 pounds in 2 weeks. Recovery complete.

Case 22. Baby T. M. Age 11 months. Diagnosis: Fermentative diarrhea, acidosis and acute bronchitis. Has had cough 2 months and steady loss of weight for past several days. Frequent loose stools and uncontrollable vomiting. Wt 14 pounds, 2 ounces. A markedly rachitic baby in a profound state of prostration. Pulseless. T. 103. Subcrepitant râles over whole chest. 100 c. c. citrated blood given. Mother donor. Both in Group 1. Reaction followed, temperature increased 2 degrees. Transfusion and other measures ineffective and baby died on following day.

Case 23. Baby V. F. Age 18 months. Diagnosis: Fermentative diarrhea and pyelitis. Has had persistent diarrhea and anorexia for a month. Has become very pale and flabby; lost 2½ pounds past 4 weeks. Wt. 19 pounds. Baby transfused with 250 c. c. citrated blood via superior longitudinal sinus. Father donor. No agglutination. No reaction. Appetite returned, with steady convalescence and gain in weight.

Case 24. Baby S. M. Age 3½ months. Diagnosis: Fermentative diarrhea (with intoxication). Stools have never been normal since birth. For past 4 or 5 days has been in a stupor, with high fever and has refused food. Wt. 9 pounds. An acutely sick baby, very pale and undernourished. R. B. C. 3,500,000; Hb. 55%; W. B. C. 14,000. 100 c. c. citrated blood administered. Father donor. Both in Group 1. No reaction. R. B. C. 4,100,000; Hb. 65%; W. B. C. 12,500. Baby takes and retains lactic acid milk and Karo mixture. Gain of ½ pound in ten days and 2¼ pounds in a month.

Case 25. Baby H. F. Age 9 months. Diagnosis: Infectious diarrhea. Severe diarrhea for 2 weeks. A poorly nourished infant in state of collapse. 80 c. c. citrated blood given. Cousin donor. Some agglutination observed, but given as emergency measure. Severe reaction followed and temperature reaching 106 degrees. Baby apparently moribund for several hours. Reacted and on following day appeared much better, with temperature 100. Takes nourishment and seems much stronger. Complete recovery.

Case 26. Baby S. M. Age 6 months. Diagnosis: Athrepsia. Has had non-projectile vomiting for 5 months. Weight same as at birth. Has had malted milk since birth. Wt. 7 pounds. Typical picture of starvation. 60 c. c. citrated blood given. Father donor. No agglutination. No reaction. Lactic

acid milk and Karo mixture. After a day or two vomiting entirely ceased and baby began to steadily gain in weight. At 12 months of age baby weighed 18 pounds.

Case 27. Baby L. M. Age 14 months. Diagnosis: Fermentative diarrhea, acute otitis media and ulcerative stomatitis. For 2½ months has had diarrhea. Has lost much weight and has become pale and listless. Wt. 11¼ pounds. Very poor condition. Skin in folds and very dry. Depressed fontanel. Both ear-drums bulging. R. B. C. 3,000,000; Hb. 60%; W. B. C. 15,000. Paracentesis both ears. 80 c c. citrated blood given. No reaction. R. B. C. 4,000,000; Hb. 75%; W. B. C. 12,000. Baby put on Klim milk formula. After a week, weight 14½ pounds. Complete restoration to normal.

Case 28. Baby W. F. Age 2½ years. Diagnosis: Gastro-enteric intoxication (cholera infantum). Four days ago taken acutely ill with uncontrollable vomiting and frequent large rice-water stools. Became rapidly emaciated. A pulseless, unconscious, moribund baby. 200 c. c. citrated blood given in the median bastillic vein of arm. Brother donor. Both in Group 1. No reaction. Baby died 12 hours after admission.

Case 29. Baby R. F. Age 3½ months. Diagnosis: Fermentative diarrhea. For a week baby has been having 15 to 20 loose, watery stools daily, with fever and rapid loss of weight. Refuses nourishment. Wt. 8¼ pounds. Shows water loss. Poor tissue, turgor and palor. R. B. C. 2,900,000; Hb. 55%; W. B. C. 18,000. Transfused with 80 c. c. citrated blood. Sister donor. Both in Group 1. No reaction. R. B. C. 4,500,000; Hb. 65%; W. B. C. 12,000. Convalescence rapid and complete. Weight 12 pounds 3 weeks after transfusion.

Case 30. Baby H. M. Age 14 months. Diagnosis: Infectious diarrhea, acute otitis media and acute bronchitis. Severe diarrhea for two weeks and persistent vomiting for one week. Child moribund. Cheyne-Stokes respiration. T. 104. Both ear-drums bulging. Râles over whole chest. Emergency transfusion 180 c. c. citrated blood. Father donor. No reaction. Baby died on following day.

Case 31. Baby T. M. Age 8 months. Diagnosis: Fermentative diarrhea and secondary anemia. Has had loose green stools for 4 weeks. Has become progressively paler and weaker. R. B. C. 1,200,000; Hb. 45%; W. B. C. 17,000. 160 c. c. citrated blood. Mother donor. Both in group 1. A definite reaction followed, with temperature rising 2 degrees and lasting 8 hours. R. B. C. 2,300,000; Hb. 60%; W. B. C. 9,600. Baby given complementary feedings of lactic acid milk and sent home improved.

Case 32. Baby T. F. Age 16 months. Diagnosis: Infectious diarrhea and pyelitis. Severe diarrhea for 2 weeks. Has lost weight rapidly and is now listless, refusing all nourishment. Wt. 13¼ pounds. Pale, poorly nourished and toxic. T. 103. Pulse weak and rapid. Urine shows much pus. 180 c. c. citrated blood administered. Father donor. Both in Group 2. No reaction. Lactic acid milk and soda bicarbonate prescribed. Improvement progressive. Weight 14½ pounds 6 days after admission to hospital. Improvement continuous.

Case 33. Baby G. M. Age 15 months. Diagnosis: Infectious diarrhea. Four months ago baby became acutely sick with diarrhea, having 24 bloody stools daily. Never fully recovered. For 3 weeks has been vomiting feedings. Has lost 5 pounds in weight. Wt. 16 pounds. Shows decided degree of

anhydremia. Very flabby and pale, abdomen distended. R. B. C. 2,770,000; Hb. 65%; W. B. C. 6,600. 100 c. c. citrated blood given. Sister donor. No agglutination. For several hours after transfusion temperature was elevated 2 degrees. After transfusion R. B. C. 3,300,000; Hb. 75%; W. B. C. 8,200. Baby gained ¼ pound the week following transfusion and was subsequently lost sight of.

Case 34. Baby C. M. Age 22 months. Diagnosis: Infectious diarrhea and acidosis. Very acutely ill for 3 weeks. Frequent bloody stools and high fever. A much emaciated baby in state of collapse. Vomiting. Air hunger. T. 103. Radial pulse too rapid and weak to count. 180 c. c. citrated blood given. Father donor. Slight reaction, T. 105 for 6 hours after transfusion. General appearance much better on following day. Takes and retains lactic acid milk and Karo mixture. Recovery.

Case 35. Baby W. M. Age 12 months. Diagnosis: Athrepsia. Baby has never thriven since birth. Wt. 8 pounds. Rachitic rosary, Harrison's groove. Enlarged epiphyses. Skin in folds and of an ashen hue. Practically no subcutaneous fat. R. B. C. 3,500,000; Hb. 60%; W. B. C. 13,600. Transfusion with 100 c. c. citrated blood. Mother donor. Both in Group 2. No reaction. Appearance after transfusion much improved. R. B. C. 4,500,000; Hb. 70%; W. B. C. 12,400. Takes lactic acid milk, codliver oil, fruit juices and vegetable soup. Gained ¼ pound in 9 days (subsequently lost sight of).

Case 36. Baby W. F. Age 7 months. Diagnosis: Fermentative diarrhea (with intoxication). Baby has had 15 to 24 bowel movements for 2 weeks. For past several days has vomited milk. Wt. 10 pounds. An extremely ill infant, in state of stupor. Skin cyanotic and mottled. Transfused with 100 c. c. citrated blood. Father donor. No reaction. No improvement, and baby died 24 hours later.

Case 37. Baby B. F. Age 15 months. Diagnosis: Infectious diarrhea, pyelitis and acute otitis media. Has had frequent bloody stools for 11 days. For past 4 days has lain in a stupor, refusing all food. Has had 3 convulsions in past 24 hours. T. 103; P. 150; R. 30. A very toxic infant in a comatose state. Cheyne-Stokes respiration; marked anhydremia. Both ear-drums bulging. Urine contains much pus. 90 c. c. citrated blood given. Father donor. No agglutination. A perceptible reaction followed, temperature reaching 104. Paracentesis of both ear-drums. On following day respiration regular. Takes lactic acid milk mixture and retains it. Convalescence established and weight 7 weeks after transfusion 20 pounds—a gain of 4 pounds.

Case 38. Baby P. M. Age 6 months. Diagnosis: Infectious diarrhea and pyelitis. Infant has been acutely ill with severe diarrhea and high fever for 5 days. Has had several convulsions. Refuses food. A comatose infant showing marked loss of water from tissues. Unable to count radial pulse. Fine subcrepitant râles over whole chest. Urine shows much pus. R. B. C. 3,000,000; Hb. 65% W. B. C. 9,600. 100 c. c. citrated blood given. Father donor. Both in Group 1. No reaction. R. B. C. 3,800,000; Hb. 75%; W. B. C. 8,000. Lactic acid milk; intra-peritoneal injection of saline. No improvement and 4 days later 100 c. c. citrated blood again given. A third transfusion 4 days later of 80 c. c. citrated blood failed to be effective; baby died the same day.

Case 39. Baby J. F. Age 10 months. Diagnosis: Malnutrition following pneumonia, empyema and acute otitis media. A month ago baby had lobar pneumonia followed by empyema, for which she was operated. Since that time has had several attacks of acute otitis media and intestinal upsets. Takes nourishment poorly. A poorly nourished, pale infant weighing 10 pounds. There is a sinus discharging pus at the site of operation. Dullness and distant breath and voice sounds over the left lower lobe area. R. B. C. 3,500,000; Hb. 60%; W. B. C. 29,200. Baby transfused with 100 c. c. citrated blood. Aunt donor. Both in Group 1. No reaction. After transfusion R. B. C. 4,500,000; Hb. 70%; W. B. C. 22,000. Baby put on whole lactic acid milk and Karo mixture. A week later baby weighed 11½ pounds, a gain of 1½ pounds.

Case 40. Baby B. F. Age 8½ months. Diagnosis: Rickets, secondary anemia and malnutrition. Baby born after 6 months pregnancy. Birth weight 1¾ pounds. Has never thriven or gained properly and has had frequent attacks of vomiting and diarrhea. Has had condensed milk from birth until past five weeks, when whole lactic acid milk formula was prescribed. She vomits part of this after feedings. Physical examination shows a pale, very poorly nourished, rachitic infant weighing 8¼ pounds. R. B. C. 3,500,000; Hb. 55%; W. B. C. 8,200. Transfused with 60 c. c. citrated blood via the superior longitudinal sinus. Uncle donor. Donor in Group 1, recipient in Group 2. No reaction. Baby much improved in general appearance. R. B. C. 4,800,000; Hb. 70%; W. B. C. 7,800.

Aside from transfusions, the general management of these cases consisted of restoring water loss by means of intraperitoneal injections and hypodermoclyses of normal salt solution, giving lactic acid milk mixtures in most of the cases, employing tube-feeding when necessary, and in prescribing sodium bicarbonate in those cases showing evidences of acidosis or where there was a complicating pyelitis. It is noteworthy how much improvement in color and pulse-volume is shown in these infants after transfusion and how frequently it happens that they are able to retain their feedings, which were regularly vomited before the operation.

Summary: There are 19 males and 21 females. The average age was 10.8 months. The average amount of citrated blood transfused was 110 c. c. In the cases upon which blood counts were made before and after transfusions, the average number of erythocytes was 2,828,000 and the average amount of hemoglobin was 51.2% before operation, as against 3,785,000 red blood cells and 62.4% hemoglobin after the operation. The average increase of red blood cells, therefore, was 957,000 and of hemoglobin was 11.2%. Thirty-one babies recovered and nine died, a mortality of 22½%. Eight of the nine fatal cases were moribund when transfused.

CONCLUSIONS

1. Blood transfusion in certain states of malnutrition in infancy is a most valuable form of therapy.

2. The types of cases in which it is chiefly indicated are (1) those infants who either in the course of or following acute diarrhea are in a state of anhydremia and (2) cases of athrepsia.

3. Citrated blood via the superior longitudinal sinus is a safe and satisfactory method of blood transfusion in infancy.

4. Reactions following transfusion with citrated blood are rarely severe in infancy and can be reduced to a minimum by careful compatibility tests of donor's and recipient's blood, by using freshly distilled water for the sodium citrated solution, and by injecting the warm citrated blood slowly.

5. The pediatrician should be qualified to perform blood transfusions in infancy.

REFERENCES

(1) Fischer, L. The Value of Transfusion in Atrophic and Devitalized Infants and Children. Med. Rec., Feb. 1916.

(2) Kerley, C. G.: The Treatment of Secondary Anemia in Infants by Blood Transfusion. Am. J. Dis. Ch., 1917, 14, 470.

(3) Lowenberg, H.: Arch. Ped. 38, 217, April, 1921.

(4) Robertson, B., Brown, A., and Simpson, R.: Blood Transfusion in Children; Indications and Limitations; Reports of 600 Cases. North Western Med., 20; 233. Sept., 1921.

(5) Burk, S. B., and Fischer, L.: Transfusion in Infants with Malnutrition. Med. Rec., Oct., 1921.

(6) The Harvey Society Lectures. 1920-1921.

(7) Sydenstricker, V. P. W., Mason, V. R., and Rivers, T. M.: Transfusion of Blood by the Citrate Method. Jour. A. M. A., 1917, LXVIII, 1677-1780.

(8) Lewisohn, R.: Clinical Results in Two Hundred Transfusions of Citrated Blood. Am. J. M. Sc., 1919, CLVII, 253-271.

(9) Pemberton, J.: Blood Transfusions. Surg., Gynec. and Obst., 1919, XXVIII, 262-276.

(10) Drinker, C. K., and Brittingham, H. H.: The Cause of the Reaction Following the Transfusion of Citrated Blood. Arch. Int. Med., 1919, XXIII, 133-149.

(11) Clough, R. W., and Clough, M. C.: A Study of the Reactions Following the Transfusion of Blood. Sou. Med. J., Feb., 1921, 104-109.

(12) Unger, L. J.: Deleterious Effect of Sodium Citrate Employed in Blood Transfusion. Jour. A. M. A., 77: 2107. Dec., 21.

(13) Ashby, W.: Exper. Med. 34; 147. Aug., 1921.

(14) Goldbloom, A.: An Improved Needle for Sinus Therapy. Am. J. Dis. Ch., 1920; 19, 229.

DISCUSSION

Dr. G. H. Macon, Warrenton: I am impressed very forcibly with the value of lactic acid milk. Of course, all of these cases he got were old cases. If we get the cases early and start them on lactic acid milk I don't think we shall have to resort to transfusion. I had a child of my own with toxic diarrhea with quite a number of green stools, and I found I could not handle it and got my good friend, Dr. Root, to help me out. In this case he did not have to do a transfusion. The point that I wish to make is this, that lactic acid milk is the greatest thing I have ever used, and, provided we start on the lactic acid milk before it is too late, we shall not have to resort to transfusion.

This milk is practically a panacea in these diarrheal conditions if used early, and I believe if more of the profession had a proper conception of its great value more children could be saved each year from these diarrheal conditions. Some children do not like the taste of this milk, but with a little perseverance and tact they can be made to take the required amount every four hours, and it is amazing to see the improvement in the child's condition from day to day.

Dr. H. H. Harrison, Asheville: I am the strongest sort of advocate of transfusion. It is generally looked upon as a rather formidable procedure, and yet it isn't at all. If you have done it once, it is a very easy operation. Almost anybody can do it. Doctors generally look upon the typing as being the bugbear of the thing, and that is a very important part of it, but it is not a thing that almost anyone cannot do. After you get your blood typed, draw the donor's blood just as Dr. Root described. There is nothing difficult about that. Put a large needle in an adult's vein and let the blood run into a solution of sodium citrate, keeping it *warm* and *well-stirred.* Getting into an infant's longitudinal sinus is certainly not difficult, or, if you prefer to get into another vein, you can get into the external jugular. This is perfectly safe, if properly done, and a simple thing, and it is most reliable; it is one of the remedies we can *depend* on. We have lots of remedies, but most of them are not dependable. When it is needed, you can depend on it to *do* something. It just works wonders sometimes. Take a little infant slipping through your fingers. Athreptic cases show you the most radical results. You have worked out your formula, but the formula isn't making the baby gain; it has gotten to that point where it cannot assimilate a sufficient amount of food to keep it going. You have death staring you in the face. You transfuse it and it begins to gain. It goes on for a week or ten days and then fails to gain. Transfuse it again. There is no harm in repeating it. It is a thing we ought to appreciate and ought to use a great deal more.

I might say also that it is most useful in *all* severe secondary anemias, but of more than transient value in any of the primary types of anemia.

Dr. Spencer P. Bass, Tarboro: I have been very much impressed with how frequently Marriott transfuses infants. We would see a child come in who was athreptic, and Marriott would give him an intra-peritoneal injection and put him on lactic milk and he would not gain, Marriott would then give the baby some blood, and he would begin to pick up. The baby would assimilate his food, and gain for about a week, when he would again fail to gain, and probably lose a little, Marriott would give him another transfusion, and the same thing would happen; he would gain. Transfusion would probably be repeated two or three, or possibly four times, depending upon the severity of the case. Pretty soon the child would begin to assimilate his food and go

right ahead. What happens in such cases, according to Marriott, is that there is such destruction of body cells, such a deficiency of colloidial substances in the blood, and such concentration of blood that the blood is incapable of carrying nourishment to the tissues, and the tissues probably incapable of taking up the nourishment. On several occasions where blood was not readily available, I saw Marriott give acacia, and while it did not act as well as blood, it acted pretty well. Acacia is not so safe as blood; it is a foreign substance. At the same time it supplies colloid to the blood and enables it to carry nourishment to the cells and may be used when blood is not available.

Dr. Root, closing the discussion: In regard to Dr. Macon's remarks, I am glad Dr. Macon appreciates the value of lactic acid milk in infant feeding, and I wish every physician would use it early in his diarrheal cases.

The 40 cases reported were extremely ill. Many of them had been put upon lactic acid milk formulas and had not taken hold, but upon being given blood their weight curve began to rise. Many of these babies I reported here were unable to retain any nourishment, and it is a very striking fact how frequently it happens that, keeping a child upon the same formula exactly, but giving him a blood transfusion, the vomiting ceases and he begins to gain in weight. These babies were anhydremic and it is very essential in such cases to restore water loss. The best way to accomplish this is by intraperitoneal injections of saline. These cases, however, required more than that.

As to the injection of whole blood intramuscularly, I don't see how it could benefit these cases as much as blood transfusion. In a small infant you cannot get very much blood in it intramuscularly. Then, too, the red blood cells are not absorbed as such, nor is there an immediate availability of the blood, as there is when it is placed directly into the circulation. The change in general appearance after a blood transfusion is very striking. Instead of the pale, pinched face and weak pulse there is noticed a healthy color, a definitely improved expression and a full bounding pulse.

INFECTIONS OF THE URINARY TRACT (PYELITIS) IN INFANCY AND CHILDHOOD

THE VALUE OF THE CYSTOSCOPE IN TREATING OBSTINATE CASES

Hamilton W. McKay, M. D.
The Crowell Clinic of Urology and Dermatology
Charlotte

Our present tendency in medicine is to obtain sufficient definite data on a given patient, upon which we base our diagnosis and formulate a prescribed course of advice or treatment. It matters little whether the physician confines himself to some special branch of medicine or whether his patient be infant, child or adult. We all are

looking for these same preliminary data. Some of us rely on what we observe at the bedside; others are prone to interpret laboratory findings as infallible; and still others, like myself, who work with instruments of precision, are most likely to overestimate their value. If we could only intelligently correlate our findings, better diagnosticians and more hearty coöperation between physicians engaged in special work would be the result.

Little definite information about the etiology of urinary infections in childhood is at hand; very little is known about the pathology, less about the treatment. The above statement is true because the pathologist has had a poor opportunity to study the uncomplicated disease at autopsy. It is therefore the hearty coöperation and the many evidences of friendship shown me by pediatricians of this Society that have given me courage to study with you such a difficult subject.

It is my desire not to describe pyelitis during childhood in detail, but to discuss certain phases of the subject in order that some practical points may be brought to your attention.

In 1899 Larulle and Tavel (1) first found the colon bacillus in the urine. In 1894 Holt (2) described pyelitis in detail. Pyelitis, as it is generally diagnosed today, can hardly be considered a clinical entity, because, when all symptoms pointed to an infection of the kidney pelvis, the other common urinary infections, cystitis, ureteritis, pyelonephritis, calculi and renal abscess, have been found to exist, though unsuspected.

INCIDENCE

Most cases of pyelitis occur in infants under two years of age. The disease is not common in young babies but can and does occur at any age. Females are more frequently affected than males, the ratio being four to one (3). The close proximity of vulva and anus and the smearing of the fecal material over the vulva by the napkin as brought out by Hoppe (4) are factors worthy of consideration.

ROUTES OF INFECTION—BACTERIOLOGY AND PATHOLOGY

There are three routes through which infection may travel to the upper urinary tract. They are the hematogenous, urogenous, and lymphogenous routes. Helmholz (5) has produced pyelitis in animals by the intravenous injection of live bacteria. He has shown that the bacteria become localized in the papillæ and capillaries of the submucosa of the pelvis and are not first excreted by the kidney but later grow on the mucous membrane. Eisendrath (6) and David and Matill (7) have shown that bacteria actually ascend from the bladder along the ureters by means of the lymphatics. The direct or urogenous route should not be a difficult one to accept when some observers have actually seen, with the cystoscope, regurgitation of urine from the bladder into the ureters. Regurgitation of fluid from the bladder up the ureter is an experimental fact, and bladder regurgitation occurred in 73.3% of Groves and Davidoff's (8) experiments on normal rabbits. Kretschmer (9) has observed bladder regurgitation clinically in three out of ten normal children.

The colon group of bacteria are practically always present as offenders, but we should not overlook the pyogenic cocci as primary invaders in some cases. In this connection the work of Bumpus and Meisser (10) is quite convincing.

DIAGNOSIS

The chief and outstanding and only constant symptom of pyelitis in children is fever, which usually ranges from 102° to 105°.

As is pointed out by Mitchell (3), it is well to consider pyelitis among the commonly unrecognized causes of fever in childhood. It must also be considered as an acute or chronic infection *without* localizing symptoms. When confronted with *obscure* fever in infancy, consider the possibility of acute otitis media, acute sinus disease, a beginning pneumonia and acute urinary infections. The first three generally give some localizing symptoms which give a clue to the diagnosis, but pyelitis seldom does.

The final diagnosis of pyelitis rests on the examination of the urine. A few pus cells are normally found in the urine of infants, and this is especially true of females. Pathologists vary in their ideas about the number of pus cells seen in a high powered field, but in the uncentrifuged specimens more than 2 to 3 pus cells to a high powered field, or more than 10 to low powered field, should be suspicious of a urinary infection. Mitchell (3) has suggested in "borderline cases" that the urine should be examined in a counting chamber as is cerebro-spinal fluid, and that over 60 pus cells per c.m.m. always indicates an infection of the genito-urinary tract. It must be emphasized that pus may not be present in every specimen and that one or two negative examinations of the urine do not exclude pyelitis. Ramsey (11) believes that pyelitis may exist without the appearance of pus in the urine for days, and in such cases he has found large numbers of colon bacilli in the urine. On the institution of the proper treatment symptoms rapidly subside and the number of bacteria decrease in the urine.

TREATMENT

To this part of the discussion I want to ask your special attention, for I am convinced that the management of urinary infections is not generally appreciated or understood. This is especially true of drug therapy. Authorities all agree that the most important measures at our disposal for the treatment of urinary infections are drainage and diuresis.

For convenience the treatment may be divided as follows: 1. General medical, including the oral administration of drugs with a definite purpose in view. Our present knowledge of therapeutics applicable to the treatment of pyelitis in children is limited to the following groups of drugs:

(a) Drugs to change the reaction of the urine.
(b) Drugs to increase the output of the urine.
(c) Drugs used for their disinfecting power.

2. Coöperative medical and urological treatment. By this plan I mean a very close coöperation between pediatrician and urologist

in a small group of cases that continually resist all plans of medical treatment. The cystoscope can be of untold help in the properly selected case.

3. Vaccine therapy has no constant place in routine treatment but may be tried in cases of long standing.

4. The administration of foreign proteins (horse serum), as advocated by Cowie (12), with the idea of producing certain antibodies in the blood stream or producing a congestion of the kidney during the "serum sickness," gives promise, but is unconfirmed.

The alkali group of drugs are the most universally used and their undenied therapeutic value clinically is well known. How do alkalies act? We do not know. It is commonly believed that the colon bacillus grows poorly in an alkaline medium. Helmholz (13) has proven that the bacillus grows abundantly in the highest alkalinity (PH. 8.6) known to take place in the human urine.

Sodium bicarbonate and potassium citrate are the best examples of the alkali group.

There is no sound experimental or clinical proof of the fitness of any known drug for use as a urinary antiseptic (Davis) (14). Urotropin is of known antiseptic value given under proper conditions, but the liberation of formalin at the kidney level is questionable and the drug is very often disappointing in its clinical results. Helmholz (13) from a review of the literature of pyelitis finds few who believe urotropin of much value.

Acriflavine (14) and proflavine, given under proper conditions and the proper dosage, is secreted in the urine in sufficient quantity to render the urine unfit to grow the colon bacillus and the staphylococcus. This we hope will prove our most promising drug.

The cystoscope is of unquestioned value in the treatment of female children that resist the ordinary accepted medical treatment. For well known anatomic reasons its usefulness is restricted in young males. Beer (15), Hinman (17), Stevens (18), and Kretschmer are pioneers in this field of pediatric urologic surgery, but it is to be regretted their work is not generally emphasized in the plan of treatment for pyelitis. Children with pyelitis who are subjected to ureteral catheterization should have first resisted all known scientific medical treatment or they should show a marked tendency to recurrent attacks. Children submitted for urological examination should be most carefully selected cases, and there should be the closest cooperation between pediatrician and urologist in their general management.

I am personally indebted to Dr. H. L. Kretschmer, of Chicago, for much valuable information obtained on this subject in his clinic.

SUMMARY

Pyelitis is one of the obscure causes of fever in infancy and childhood and must be more frequent than diagnosed. Repeated examinations and cultural studies of the urine should be made to either exclude pyelitis in obscure fevers or to determine when a cure is effected. Experimentally the alkali treatment is not understood, but clinically is the most satisfactory. No known drug is a satisfactorily proven

urinary antiseptic at kidney level. The indications for cystoscopic studies in children are practically the same as in adults, but the application is more limited and the cases should be carefully selected.

BIBLIOGRAPHY

1. Rawles. Medical Record, October, 1911.
2. Holt. Archives of Pediatrics, November, 1894 (Quoted by Graves).
3. Mitchell. Archives of Pediatrics, November, 1923.
4. Hoppe. Archives of Pediatrics, Vol. XLI, No. I, January, 1924.
5. Helmholz. Journal A. M. A. 22:606. December, 1921.
6. Eisendrath and Schultz. Journal A. M. A. 68, p. 540, 1917.
7. David and Matill. Archives Surgery 2:153, January, 1921.
8. Groves, R. C., and Davidoff, L. M. Transactions of Assoc. of G.-U. Surgeons, Vol. XVI, 1923.
9. Kretschmer, H. L. Cystography, Surgery, Gyn. & Obs. Vol. XXIII, p. 709, 1916.
10. Bumpus and Meisser. J. A. M. A. 77: p. 1475, 1921.
11. Ramsay. Amer. Jour. Dis. Children. 24:218. September, 1922.
12. Cowie. Amer. Jour. Dis. Children. 24:179. September, 1922.
13. Helmholz. Journ. A. M. A. 79:285. July, 1922.
14. Davis, E. G. Journ. Urology. 5:215. 1921.
15. Beer. Amer. Jour. Dis. Children. 17:305. May, 1919.
16. Hyman. Amer. Jour. Dis. Children. 15:116. February, 1918.
17. Himman, F. Amer. Jour. Dis. Children. 17:305. May, 1919.
18. Stevens, W. E. Jour. A. M. A. 77:1081. October, 1921.

DISCUSSION

Dr. J. B. Sidbury, Wilmington: I would like to say "amen" to Dr. McKay's paper. His attitude is exactly what I would like to have in a man who was to assist me in treating pyelitis, and is, to my mind, absolutely the proper attitude. I feel that a baby or child ought not to be cystoscoped until every other means consistent with the baby's health has been tried. Cystoscoping of babies is not an easy job, and I think the men in Charlotte are fortunate in having such a man to help them treat cases of pyelitis. The medical treatment, it seems to me, is the alkaline treatment, which has to be kept up twenty-four hours out of the twenty-four; the alkali should be given every two hours, day and night, until the temperature or clinical symptoms have disappeared. Coupled with it a general medical treatment of the patient is very important—that is, if the child is in poor medical condition, run-down, there is no known treatment that is going to do as much for that child as to put it in good physical condition. Try Dr. Elias' treatment of fresh air and sunshine and taking off the child's clothes. I feel that getting the child in good physical condition is going to do more than the medical treatment. When all this has been done and it has failed, I would like to have the pleasure of calling Dr. McKay in to help me treat my stubborn cases of pyelitis.

Dr. I. W. Faison, Charlotte: I am glad to say that Dr. McKay is a Charlotte man who is making every effort to improve himself along scientific lines, and I am glad to say that we, Dr.

Yates Faison and myself, have done everything we can to help him and to put things in his hands, because we have absolute confidence in him. He is a man worthy of the confidence of anybody. He is doing his best to be unqualifiedly fit to do these things. He has a conservative paper, well-grounded, well thought out, well said. I am like Dr. Sidbury in that I want to get away from the cystoscope as much as possible, and, as Dr. KcKay says, away from it in male children particularly.

There is one thing about that fever that has impressed me for a long time, and that is in my experience the highest fever has been recorded from midnight until day. I have made it my purpose to have the nurse or mother take the temperature right along, day after day, and almost invariably this temperature has been at its height between midnight and day. One of the English physicians wanted to call it after himself after he found out this fact. Another thing that is important about pyelitis is some will not get well. The doctors who do obstetrical work run up against it in their obstetrical practice twenty-five years after the patient was treated. If you will go back over your cases and follow up those that showed pus in urine while children and now show poisoned conditions of their kidneys in obstetrical work, they never have gotten well. Some of them you can't get rid of. They go along for a while and you think they are all right, and then they wake up with a high fever at night. It is one of the things that takes the pep out of a man. In the treatment of it I have come down almost to two drugs, citrate of potash and sodium bicarbonate. I have long ago quit urotropin.

This is a very interesting sickness and one in which you have that contented feeling about your diagnosis—when you have these symptoms you can write it down pyelitis and go to sleep and feel almost sure that the diagnosis is true. Successful treatment is entirely another game.

Dr. J. E. Kerr, Winston-Salem: I wouldn't feel right if I should fail to add a word in this discussion on the subject of pyelitis. I knew Dr. Faison was going to say "We have pyelitis with us always, treatment or no treatment." I want to just mention again the point I made last year in Asheville: that is, that you should examine urine frequently, for the simple reason that you may not find pus in the first specimen and may find it in the second.

A case that I wanted, especially, to mention was that of a young child who came under my care who had been visiting in Virginia. The child became ill while on the visit and was treated for some stomach and bowel trouble. The child came home and was still treated for the same trouble. It had been ill for nearly three weeks when I was called in to see the case. The first thing I did was to ask the mother for a specimen of urine from the child. She obtained a specimen in a day or two and I examined it and found it full of pus. I take it that was what the child had had all the time. The other doctors should have asked for a specimen of urine. It is such a commonplace thing to do that we get careless and overlook it. I gave

the patient a little soda bicarbonate and never saw it again. The mother called me over the telephone in a day or two and said the child was improving. It was necessary to make only one trip to see the baby.

Dr. W. E. Coltrane, Dunn: I don't see much pyelitis in children, but see a good many cases of urinary infection in persons from ten to fifteen years of age. We find a good many of these older children have some genital abnormality, irritation of the bladder, misplaced kidney or double ureter, or something that interferes with the drainage of urine from the kidney. We should study children who are often confined with these repeated infections to see if the trouble is due to some genital abnormality. I haven't had any experience in cystoscoping children under seven years of age. I have cystoscoped girls about that age. I don't know how young a girl child ought to be cystoscoped. I think there is one point Dr. McKay didn't bring out, and that is searching out these obstinate cases for evidence of abnormality in the urinary tract, which can oftentimes be corrected before the person has to go through years of infection and maybe lose a kidney or have some very radical operation done as a result of this prolonged infection.

Dr. W. C. Verdery, Fayetteville: The members who were here last year and heard a discussion of pyelitis were inclined to kick the man with the cystoscope. This paper I have just heard makes me think what I heard in Asheville was all wrong. I would like to ask Dr. McKay whether or not he has used what Dr. Hugh Young has recommended recently—mercurochrome 220 intravenously in pyelitis.

Dr. McKay, closing the discussion: I want to thank the members of the Section on Pediatrics for the kindly way in which they have received this little paper and say in closing that I believe you can sum up the discussion by saying that progress will be made in the treatment of this disease as co-operation is obtained between pediatrician and urologist.

We have had no experience in our Clinic with the intravenous administration of the dyes, namely, gentian violet and mercurochrome, in the treatment of pyelo-nephritis. We have used mercurochrome intravenously in two cases of the above disease in adults and believe the results are encouraging, but I would not advise such therapy in children until we know more of the reaction produced.

CEREBRO-SPINAL MENINGITIS

REPORT OF CASE

DEATH FROM RESPIRATORY PARALYSIS DUE TO PROLAPSE OF CEREBELLUM—AUTOPSY PRESENTATION OF SPECIMEN

R. A. Herring, M. D., Greensboro

Male, age 6, child from fifth pregnancy. Previous history unimportant, having had only measles, whooping cough and influenza. Tonsil and adenoid operation 1922. Rather undernourished. Was taken ill March 17, exhibiting with onset temperature, drowsiness, headache and vomiting. These symptoms were of moderate grade and no uneasiness was felt concerning his condition until March 21, when the vomiting increased, the temperature was higher and headache (frontal in type) became more severe, stupor was present and he complained of pain on being handled.

He was seen first on March 23rd and had been without medical attention up to that date. At that time he presented the typical picture of cerebrospinal meningitis of moderate severity. The head was much retracted and the neck rigid. Very slight, if any, hyperesthesia was present; no petechiae; pupils normal. Kernig's and Brudzinski's neck sign were positive; temperature 104.4. Lumbar puncture done at 4 p. m.; fluid under increased pressure and very turbid and of yellowish tone. Laboratory report, 5600 cells with a relatively small ratio of a gram-negative diplococcus present. White count 27,000. Urine negative. Further physical examination failed to reveal the presence of intercurrent condition or complications. Anti-meningococcic serum (P. D. & C.,) 15 c. c. administered by gravity when the fluid was found to be turbid on first lumbar puncture. Progress during the night was uneventful. The next morning the patient was very restless and in much discomfort, urinary retention present, temperature 100 F.

When seen again at 11 a. m. change of serious import was observed. Temperature 102 F; patient was unconscious; the right pupil was widely dilated, and Cheyne-Stokes respiration was present, interval about ¼ minute. Lumbar puncture was done and 25 c. c. of fluid drawn off. Respiratory paralysis of sudden onset occurred three to four minutes after withdrawal of fluid. This was characterized by pure respiratory failure with rapid onset of cyanosis, without immediate impairment of the cardiac mechanism. Artificial respiration was administered for 40 to 45 minutes without result due to gradual supervention of cardiac failure. Death at 11:55 a. m.

AUTOPSY

Omitting detailed autopsy report as it applies to the central nervous system, it may be said that the meninges, cerebro-spinal fluid and surfaces of the brain presented the usual appearance and pathologic condition of the typical case of cerebro-spinal meningitis. In general there was marked congestion of the vessels, deposits of fibrino-purulent exudate upon the cortex and base, some increase in and cloudiness of the cerebro-spinal fluid, and slight smoothing out of the cerebral surfaces. Internally there appeared to be an increase of fluid within the ventricles, though blocking of the foramen of magendie and foramin of luschka could not be demonstrated. Smears made directly from the fluid of the subarachnoid space and ventricles showed a gram-negative diplococcus as on

lumbar puncture. Additional pathology appeared to be a sinking downward or prolaspe of the cerebellum and other lower brain structures. This was indicated by obliteration of the normal rounded convex under-surface of the cerebellum and substitution therefor of a molding of the tonsillar lobes into the incline of the inferior occipital fossa. This lobe on each side and a part of the biventral lobe on the right were found to have assumed a more or less pyramidal shape with the apex downward. In addition the apex of each molded portion showed an area of tissue change that appeared to be an early pressure necrosis, the area on the right side being greater than that on the left.

COMMENT

The occurrence of respiratory paralysis, accompanied by a marked fall in blood pressure, in the course of management of cerebro-spinal meningitis has been, ever since the introduction of serum treatment of this disease, the most unfortunate complication that may occur. It occurs following lumbar puncture either before or after the administration of serum, and accordingly is more to be deplored by reason of the fact that its occurrence would appear as if it might be due to some fault incident to that procedure or in connection with the administration of serum. Attention was first drawn to its occurrence coincident with the first use of anti-meningococcic serum in this connection. Its cause at that time was attributed to change in intracranial pressure incident to treatment, either too rapid lowering of this pressure by too rapid withdrawal of fluid or too sudden increase of pressure by introduction of serum, this change affecting directly the centres of the modulla. This conclusion led to the precautions advised at that time to prevent this respiratory paralysis, viz., lumbar puncture always with the patient in the reclining position, blood pressure observations while the treatment is being carried out, withdrawal of fluid slowly and not in excessive amount, the withdrawal of an excess of fluid over the amount of serum administered, and the administration of serum slowly by gravity instead of by syringe pressure. The Flexner group, who perfected the serum treatment of meningitis, held mainly to the idea that respiratory paralysis follows sudden change in intracranial pressure, basing this conclusion upon experimental work in which the factor of sudden change in intracranial pressure seemed to operate. Shortly thereafter the idea was advanced mainly by Voegtlin of the Hygienic Laboratory, U. S. P. H. S., that it was produced by the toxic effect of the preservative in the serum upon the centres in the medulla. Experimental work indicated that the preservatives tricresol and phenol were depressant upon these centres in even small percentages. Chloroform was found to be non-toxic, and it was accordingly recommended that chloroform be used in place of the preservatives tricresol and phenol. More recently the explanation has been advanced that this complication is due to mechanical pressure upon the medulla with resultant pressure upon or constriction of the centres in the medulla, in some manner brought about by prolapse of the medulla or cerebellum. Autopsy evidence leads to this assumption, though such evidence, while convincing and conclusive,

when demonstrable, is at the present time said to be very meagre, since pressure can be exerted by prolapse in this manner without producing sufficient gross anatomical change in the brain structures to indicate its occurrence. It is the presence of ample such evidence that lends interest in the present case. The mechanics of such prolapse appears to depend upon an internal hydrocephalus to furnish the weight above, combined with a negative pressure in the spinal subarachnoid space and cisterna magna below, this negative pressure being brought about by withdrawal of fluid on lumbar puncture. It is assumed that prolapse occurs only under such conditions of partial or complete internal hydrocephalus, the weight of the fluid within the ventricles above being necessary to cause sinking of the cerebellum and madulla downward, since it is stated that the condition never occurs in neurologic practice, where complete drainage of the subarachnoid space and ventricles is frequently done for therapeutic purposes. A point of clinical importance in this connection is that the frequency of respiratory paralysis varies directly with the stage of the disease at which treatment is begun, its frequency increasing the later the case is seen. This point has a bearing upon the production of internal hydrocephalus, since the later the stage of the disease the greater the probability of inflammatory obstruction of the foramina of exit from the ventricles that would serve at least partially to block these foramina and thereby cause retention of fluid within the ventricles.

In this case the pathology is quite apparent, since quite marked change from the normal is seen on the under surface of the cerebellum. It is conceivable that emptying of the spinal subarachnoid space and cisterna magna in the region of the foramen magnum created a space below the cerebellum into which it might descend. Its descent would be caused by an increase in weight above, this weight being represented by an increase of fluid within the ventricles due to blocking of the foramina of exit. In its prolapse the cerebellum would tend to wedge a part of its under surface into the incline of the inferior occipital fossa leading into the foramen magnum, producing the molding seen involving the tonsillar and biventral lobes. Continuation of this pressure from above for a period with the wedging described and impingement of the apices of the molded portions upon the occipital bone would produce the bruising found at these points. The cerebellum in its descent would wedge toward the mid-line. This would serve to compress the medulla between the cerebellum and the basilar process of the occipital bone upon which the medulla rests and thereby cause pressure upon the medullary centers. The clinical phenomena occurring are answerable directly by such pressure exerted upon the medulla. The centers of the medulla, it will be recalled, consist of several reflex and three automatic centers. Disturbance of function of the reflex centers by pressure upon this portion of the brain would be manifested by failure of reaction to external stimuli of the functions which these centers govern. This loss of control in most of the reflex centers, of course, would be apparent only when an external stimulus is applied and failure of reaction occurs. In

reference to the centers governing deglutition, vomiting, etc., this loss of control would be difficult to determine under the circumstances. The dilated pupil on the right side, however, would indicate disturbance of reflex control of the pupil through the constrictor fibres of the third cranial nerve, that is by failure of response to the light reflex by contraction through loss of function of this center in the medulla.

The three automatic centers in the medulla are the cardiac, the vasomotor and the respiratory. Constriction of the medulla and pressure upon these centers would serve to inhibit function of all three. Inhibition of the cardiac centre, however, does not necessarily stop cardiac action, since the heart has the ability to contract automatically and therefore would continue to beat. Cessation of control of the vasomotor centre would result in a flaring open of the blood vessels with a marked drop in blood pressure resulting. Pressure upon the respiratory centre would result in immediate cessation of respiration. The clinical phenomena observed coincide exactly with these possibilities.

Prolapse of the cerebellum in this case evidently occurred some hours prior to the second lumbar puncture, since the molding and tissue changes in the cerebellum would necessarily require some hours to be brought about. It may, however, have been increased by the second puncture. The pathologic specimen is presented for examination.

DISCUSSION

Dr. J. B. Sidbury, Wilmington: I think this is a very interesting paper, and I feel that if we could be as fortunate as Dr. Herring and get an autopsy on these unfortunate accidents that happen in the line of our therapy, we would soon get a line on the conditions that produce them. I think that you would get a great many more autopsies if you went at it in the right way. I feel that in meningitis, where there is an inflammation of everything pertaining to the cerebro-spinal system, it is possible to have almost anything happen at any time. I have been very much interested in Dr. Herring's explanation of how this happens. He has had a number of cases so I feel he has a right to speak as an authority on the subject.

SECTION ON PRACTICE OF MEDICINE

D. Heath Nisbet, M. D., Chairman, Charlotte

THE DIAGNOSIS OF A FOREIGN BODY IN A BRONCHUS

Edward W. Schoenheit, M. D., Asheville

It is hardly necessary to mention the frequency with which foreign bodies in the bronchi are encountered. Our attention has been especially attracted to the many interesting cases in which bronchoscopy has been performed since that specialty has been so remarkably developed by Dr. Chevalier Jackson, whose results with the bronchoscope have been truly astonishing.

The writer brings this subject before you to stress the fact that notwithstanding the frequent occurrence of foreign bodies in the bronchi the presence of a foreign body is sometimes over-looked, and trusts that a brief resume of the chief diagnostic points may be of interest to those who have not dealt with similar cases.

History. It is usual to begin a discussion of this kind with the history. However, I should like to call attention to the fact that foreign bodies have been discovered in cases in which there was no history of aspirating any object. The patient may remember nothing about it, and the body may have entered the air passages without producing coughing or gagging. McCrae (1) mentions a case of this kind in which the tip of an atomizer was aspirated.

Usually there is a history of gagging, choking, coughing and wheezing, sometimes dyspnea and cyanosis, all of which may disappear afterwards, and often times the physician has been deceived by this cessation of symptoms, believing the object to have entered the stomach. Later, when other symptoms appear, this occurrence is entirely forgotten.

Symptoms. After a few days' freedom from symptoms, there is usually a return of coughing and wheezing. At this time the asthmatoid wheeze which Chevalier Jackson describes is most apt to be heard. This is a peculiar wheezing sound heard during expiration by placing the ear in front of the patient's mouth. The wheeze is drier than that of asthmatic patients. It is heard best at this time because the bronchus is not obstructed; if the body completely obstructs the bronchus it is not heard.

The symptoms vary according to the composition of the foreign body. Organic bodies are prone to cause a severe inflammation with a sudden rise in temperature and the clinical picture of pneumonia, death having occurred in a few days' time after the aspiration of a peanut kernel. Inorganic, especially metallic bodies, may remain for months without producing severe symptoms. There is usually a gradual decrease in weight and strength, persistent cough, sometimes hemoptysis. There may be all the signs of phthisis, including fever, but there are never any tubercle bacilli in the sputum. There may be slight leucocytosis. Pain is a rare symptom.

The continuous irritation of the metallic body causes swelling of the surrounding tissues which, together with corrosion of the metal, increasing its size, causes obstruction; fever rises, and there is abscess formation, bronchiectasis or gangrene of the lung. If there is a complete obstruction soon after the aspiration of the object, then there is early abscess formation. Abscess formation occurs soon with organic bodies, unless the case runs an acute, fatal course.

Physical Signs. These depend upon the position of the foreign body and the length of time it has been in the respiratory tract, as well as upon its size, shape and composition. Usually the right bronchus receives the body, due to the somewhat larger lumen and steeper course. Almost always it is a lower lobe bronchus. Physical signs are practically always localized in one lung, but cases have been seen in which there are signs in both lungs. They are, however, more diffuse in the unaffected side. If there is no obstruction there may be few or no physical signs, but with partial obstruction the first and most constant is diminished expansion on the affected side, which McCrae (2) considers the most valuable sign. There is also impairment of the percussion note approaching dullness and flatness with increase in secretion, and diminution of breath sounds over the portion of lung below the obstructed bronchus. Medium moist râles, the asthmatoid wheeze and inspiratory retraction of the apices may also be noted but are often absent. With complete obstruction the signs are those of atelectasis.

X-Ray. The X-ray is perhaps the most valuable aid, although ten to fifteen per cent of all cases do not show anything. Metallic bodies are usually seen, but may be obscured after long residence due to accumulation of secretions and condensation of tissue. Unfortunately, certain bodies which are usually organic are non-opaque to the ray and cast no shadows. It is in this class of cases that an early diagnosis and removal are most important. Jackson, Spencer and Manges (3) have found valuable X-ray changes in these cases, namely increased transparency on affected side, depression of the diaphragm on affected side, and displacement of heart and mediastinal structures away from the affected side. The increased transparency is due to an acute obstructive emphysema. Later, when secretions accumulate and we have a condition known as drowned lung, there is increased density on the affected side.

Diagnosis. Therefore, in our diagnosis, although most often made from history, symptoms and signs and X-ray, we should nevertheless suspect a foreign body when we have a patient with localized symptoms in one lung, especially a lower lobe, with gradual loss in weight and failure in strength, absence of tubercle bacilli in sputum, elevation of temperature, slight leucocytosis, and persistent cough, even though no history is obtained, and we should make every effort to disprove the presence of a foreign body. Some have even advised exploratory bronchoscopy when the X-ray has shown nothing.

The following case will illustrate some of the points that have been mentioned and some of the difficulties encountered.

The patient was a woman 46 years old, complaining of severe pain in the right side of the chest, cough and fever. She was admitted to the Winyah Sanatorium November 10, 1923. Past and family histories were negative.

The present illness began after a tonsillectomy with general anesthesia (nitrous oxide and oxygen), July 3, 1923. On the following day she suffered from difficult breathing and wheezing, and shortly afterward began to expectorate phlegm. She continued to lose in strength and to feel run down, but did not know whether or not she lost weight until six weeks had passed, when she began to run a temperature of 100 to 101. Her physician then referred her to an internist, who made a thorough examination, including X-rays, and diagnosed the case as chronic fibroid tuberculosis. She was then referred to us by her family physician.

Our examination was made under difficulty. The patient appeared as one suffering from severe pleurisy, and the right thorax was strapped in order to lessen the pain. Examination of the chest naturally, therefore, showed less expansion on the right side. The percussion note was slightly impaired in both upper lobes and auscultation revealed harsh breath sounds and a few râles which were not constant after coughing. Below the right axillary region there were râles which resembled those seen in acute pleurisy, and the pain was severe at that point on deep inspiration. The sputum never showed tubercle bacilli, although we made numerous examinations. The amount of sputum was not large; it contained numerous pus cells and had no disagreeable odor. It did not separate into layers upon standing and there was no elastic tissue. The leucocyte count was 14,000; a blood culture was negative.

We did not feel warranted in disturbing the patient for an X-ray examination, as we had the report of a competent man.

In considering the diagnosis we felt that we were dealing with something besides tuberculosis, because of the sudden onset after the tonsillectomy. We did not deny the presence of an old healed tuberculous lesion, but the long continued fever, which ran from 100 to 102 without remission, and the absence of tubercle bacilli and absence of marked apical signs suggested something else. Abscess, gangrene or bronchiectasis did not fit the case. Foreign body was thought of, but repeated questioning did not bring out any history.

After several days, however, the patient remembered having lost the crown of a tooth just before the tonsillectomy, but did not remember swallowing it, or gagging or coughing at that time, and had forgotten about it. This should have been our clue. However, we felt sure that a gold crown would have shown in the X-ray plate or that she would have choked on it at the time. The pain, also, was not indicative of it.

The patient continued to run fever of over 100, and pulse of 90 to 100 for the following week, but her cough seemed less. The pain still continued. A week later the temperature averaged 99, and the cough was better. She slept at night without the codein tablets we gave her for the cough. Examination of the chest by

this time showed less signs than at any time before and no râles at all could be heard. The adhesive straps were removed.

Improvement continued in this manner until December 11, when the patient coughed violently upon awakening and brought up a gold crown of a molar tooth with a cupful of thick, ropy sputum.

We then learned that she had had a wisdom tooth extracted while under the anesthetic for the tonsillectomy and that the crown from the adjacent tooth had probably been dislodged at this time. Of course, being anesthetized, she did not gag nor cough. The crown had been mistaken for a large calcified gland by the X-ray man.

We obtained the plate, which showed an object in the right fourth interspace which seemed too dense for anything but metal. A fluoroscopic examination showed that this had disappeared. Examination the following day showed dullness at the right base extending to the angle of the scapula. Increased vocal fremitus, tubular breathing, whispered pectoriloquy and many fine râles. Two days after the crown had been expelled the temperature never went above normal. After ten days all the lung signs cleared up and expectoration ceased.

The patient remained in the sanatorium a few weeks to regain her strength and went home feeling well and in good condition.

References.

(1) T. McCrae. American Journal Medical Sciences, Volume CLIX, No. 3, p. 313 (March, 1920).

(2) T. McCrae. Loc. cit.

(3) Jackson, Spencer and Manges—Cited from Dietrich, H. and Berkely, H. Journal A. M. A. Volume 81, No. 14, p. 1202 (Oct. 6, 1923).

DISCUSSION

Dr. C. C. Phillips, Charlotte: This is a very interesting subject that Dr. Schoenheit has spoken on, and his paper is well prepared. I have been very much interested for quite a while in the diagnosis of foreign bodies in the bronchus from the X-ray standpoint. There are one or two things that I would like to emphasize. The first is that when we have a history that indicates the presence of a foreign body in the bronchus, do not be satisfied with one negative examination, because if the patient is examined at frequent intervals every few hours for a day or two days, we shall in some cases be able to make a positive diagnosis of a foreign body when on first examination or on second, third or fourth we have not any X-ray evidence of it. This is particularly true in case of watermelon seed, as they readily move from one place to another. At times we may find this in the right bronchus and afterwards in a few hours in the left. Other objects may do this also.

I also want to emphasize the importance of fluoroscopic examination, and I believe it is important to make this in every case.

THE OCCURRENCE OF MOLDS IN THE SPUTUM

Mary E. Lapham, M. D., Highlands

The radiographs of a case sent to me for the treatment of chronic tuberculosis showed a saccular dilatation at the root of each lung but the sputum was not at all like that of bronchiectasis. It was dry, tough, tenacious and more like a clot of fibrin or even like organized tissues than bronchial secretions. It could not be teased out into shreds nor pressed out into a film sufficiently thin to be studied under the microscope, but broke up into granules about as large as the head of a very small pin and these granules were very distinct when the sputum dried. The sputum seemed to be a mass of fibres like those seen in smears made from sputum and feces, running in all directions, inextricably interwoven, presumably conferring its tenacity upon the sputum. These fibres seemed to be tubular in places but they could not be distinctly seen because they were densely covered with what appeared to be leucocytes. At first these small, round cells appeared unquestionably to be white blood cells, but looking at them more closely they did not seem to be characteristically nucleated nor granulated. In many places they were simply round and colorless cells with no suggestion of nucleus or granules, and rather more like colloid structures than anything else or even like fat. Smears made from the sputum did not show these globules and they could only be properly seen when the sputum was examined crushed in glycerin. That the sputum was composed of mucus threads or threads of fibrin covered with white blood cells began to seem improbable because these globules would not stain in smears nor in the crushed specimen as white blood cells do. One day the preparations were flooded with myriads of glistening globules looking like fat and varying in size from cocci to lymphocytes. Very brilliantly refractile, they did not stain with sudan III, were not dissolved but scattered into fragments by alcohol and ether; did not stain with iodin but were tinged by fuchsin. They were soft and easily destroyed by the pressure of the cover glass, becoming aggregated into shapeless masses. Could these globules be spores?

Presently minute, attenuated threads of highly refractile protoplasm appeared, bluish in color, and tipped at the ends with minute granules, also highly refractile: could these glistening threads be antheridia? Could the mass of fibres represent a mycelium, were the fibres hyphae, the globules spores? There was no resemblance to a culture made from molds and no distinctive findings to warrant such a conclusion, and yet the impression was more and more strongly confirmed that this tenacious sputum was not composed of pus cells and mucus and bronchial secretions, but the product of the growth of a mold. After puzzling over these findings for many days, there appeared, floating into view at the edges of the mass of fibres and cells, a very brilliantly refractile cell, about half as large as the egg of an asceris, filled with

spherical bodies varying in size from cocci to small lymphocytes, and with black pigment granules isolated or clumped. This large cell was exceedingly conspicuous, oval in shape and sharply contoured, so that it suggested a parasitic origin. In attempting to preserve it, this cell was destroyed. A few days later two more cells appeared, similar in appearance but fully as large as the egg of an asceris; they were destroyed by the pressure of the cover glass. Now the sputum began to get thinner so that it could be pressed out into a thin film showing clear spaces free from fibres, and in these clear spaces cells began to appear, varying in size from a small lymphocyte to twice the size of a megaloblast. They were oval or spherical in shape, and filled with minute globules which were highly refractile and with pigment granules. Some cells were densely opaque with pigment, others almost colorless, but all were sharply contoured. These cells did not stain with methylene blue, they did not stand alcohol well, they could not be found in smears, and in sections made of the sputum they were absent. They appeared in great quantities for two months and then disappeared and were not found again for four months, when they gradually increased in quantity until they were abundant. These large cells have been shown to the best authorities but so far have not been identified.

The impression that the sputum was the product of the growth of a mold or molds was confirmed when a structure like that of a sunflower appeared. It was about the size of a very large Graafian follicle, brilliantly yellow in the depths of its centre, surrounded at the periphery by a border of colorless, brilliant cells, several layers in depth, pointed and concentrically arranged. This conspicuous sunflower strongly suggested an oogonium or rather an oosphere, so cultures were made from the sputum and aspergillus fumigatus with alternaria were obtained. Did the large cells have anything to do with the life history of these molds or were they a distinct entity?

The interesting point in the cultivation of aspergillus and alternaria from this sputum is not the addition of one more case to those previously reported, but the significance of the facts that this case had for six years been regarded as one of tuberculosis and so treated; that although tubercle bacilli had never been found, there seemed to be no question of its not being a case of tuberculosis because the physical findings and the radiographs were so pathognomonic; that cultures made from this sputum upon various culture media did not grow; that the examination of the sputum by ordinary methods destroyed all evidence of the real condition: and that the study of sputum may profitably be made along other lines than those now in use. Since these molds were found in this sputum, which in no way suggested their presence, it seemed well to make other cultures of other cases of tuberculosis with or without the presence of tubercle bacilli in the sputum. In every case the sputum contained molds, either aspergillus fumigatus or glaucus or some variety of Eurotium, or alternaria or monilia or yeasts. I have

found molds in the sputum of measles, acute broncho-pneumonia, "flu," chronic bronchitis, colds of all kinds, chronic catarrh, and in three cases of what at first seemed to be pus in the urine. We are accustomed to the bad effects of what we call "seasonal changes" in tuberculosis and are not greatly surprised when patients begin to "go down" as warm weather comes on in the spring. In four cases of chronic tuberculosis with tubercle bacilli in the sputum the advent of spring caused profuse expectoration, of a greenish, grayish color, thin and frothy with islands of thick material. Crushing the sputum from these cases in glycerin, the microscope showed fields crowded with what looked very like conidiophores, and the cultures showed molds.

Would it be worth while to make a routine study of every case of sputum to determine whether molds are or are not present; whether they are as constantly resident in the respiratory tract as bacteria are; whether, like bacteria, they may exist in pathogenic and non-pathogenic conditions; whether they are constantly present in tuberculosis and, if so, what the significance of this association may be; whether they precede, complicate or aggravate the conditions; and what the therapeutic needs of their presence may be? The four cases which came crashing down this spring after a winter of splendid improvement, showed a florid outburst of growth of molds which receded as the patients improved under injections of cacodylate of soda.

All unsatisfactory and incomplete as this report is, it is offered with the hope that during the coming year studies of sputum may be made which may help to determine the constancy of molds in the sputum and their etiological significance, especially in cases of measles and other infections with unknown etiology. If sufficient number of studies are made and reported at the next meeting of our State Medical Society, it may be that the physicians of the Old North State will have made a substantial advance in our knowledge of molds and their pathological importance. It may even be that the science of mycology will compare with that of bacteriology in demanding comprehension.

THE RELATION OF HISTORY TO OTHER FACTORS IN PRESENT-DAY DIAGNOSIS

F. Dennette Adams, M. D., Washington, D. C.

Disease in the individual manifests itself by symptoms or changes in subjective sensations, and signs or objective changes in structure or function. Symptoms, being subjective, are described by the patient; signs we discover by our various methods of examination. The diagnosis of an individual's ailment is the determination of its nature by the process of gathering all the facts, subjective and objective, which might have a bearing on the condition, by their proper evaluation and their interpretation in the light of our knowledge concerning disease entities. A diagnosis is a problem to be solved, a jigsaw puzzle for the powers of reasoning. One collects a number of isolated

facts, then attempts to correlate them and make a composite picture. If they do not harmonize one must either seek more facts or reconsider his interpretation of those already at hand.

Our data are secured by, first, history; second, physical examination; third, laboratory studies; fourth, examination by special methods such as the X-ray, the electro-cardiograph, and the determination of basal metabolism, but if evidence obtained by any of these methods is taken as absolute, when it cannot be properly correlated with that obtained by the others, mistakes are inevitable. For to be correct, a diagnosis must be capable of accounting for all or at least the greater part of the findings which the investigations have brought to light.

The history is unquestionably the most important single element in the jigsaw puzzle we are trying to solve. It is the keystone of the diagnostic arch. More errors can be traced to disregard of symptomatology than are ever caused by failure to hear a murmur, feel a mass, or to see an abnormal pulsation. And yet history is customarily the most neglected feature of the case, the most carelessly acquired, the most readily ignored. To be reminded of this one has but to turn his thoughts for a moment to the diagnostic errors which have come within the range of his own experience: angina pectoris diagnosed acute indigestion, occasionally gall bladder disease; lobar pneumonia operated upon for acute appendicitis; bronchiectasis operated upon for empyema; and visceroptosis and chronic intestinal invalidism treated, and often operated upon several times, for a variety of suspected conditions. In most instances of this kind, careful questioning of the patient, followed by meticulous analysis of his symptomatology, would have rendered the mistaken diagnosis unlikely.

In obtaining the history, the physician seeks an adequate understanding of the patient's immediate symptoms, and information concerning illnesses or experiences of the past which might have etiologic relationship to the present condition, and concerning ailments in other members of the family which might point toward existence of heritable disease and at least indicate the type of stock from which the patient is derived. It has been the experience of the ablest clinicians that the best method of securing the desired information is to begin by letting the patient describe his ailment in his own words. This narrative usually contains a vast array of unimportant details, often fails to bring out a number of pertinent facts, but at least it supplies a certain number of leads which serve as a basis for further questioning. It gives the examiner opportunity for forming a quite definite opinion of the mental make-up of his patient—an asset of no little value when evidence is to be weighed and evaluated. A history of severe epigastric pain would strike any of us as being of more significance occurring in a man of 40, always previously well, than in a woman of thirty who had not known a well day for twenty years.

Once the patient's own narrative is over, the method of procedure is guided by common sense and the merits of the case. Quite obviously the family history of a patient with lobar pneumonia is of no immediate consequence—that of a chronic gastric invalid might have an important bearing on diagnosis. In patients with acute disease the

history is definite, the facts clean cut, the symptoms of short duration. One wants only the salient features; there is nothing to be gained by wearing out a sick person with a series of questions which so far as diagnosis and treatment are concerned, are quite irrelevant. A brief account of the onset of symptoms is all the history would require of a previously healthy person suddenly taken ill with a respiratory infection. Yet, during the height of the influenza epidemic in 1918 I saw a soldier, previously well, and with unquestioned beginning influenza, submitted to a half-hour of unnecessary questioning and another half-hour of trying physical examination. With the patient in every conceivable position, his heart was examined before and after exercise, by a medical officer more enthusiastic than judicious. The latter had just taken a special course in cardio-vascular diagnosis, and had been taught the value of thoroughness and care. His intentions were good—he simply lacked perspective and an ability to differentiate the important from the non-essential.

In dealing with the chronic patient all the information available is needed. The number of unpleasant sensations, of basic symptoms, so to speak, which an individual can experience is relatively small. The relation of these symptoms to each other, their type, their character, mode of onset, duration, relation to bodily functions and various other qualities supply the key to the diagnosis. Epigastric pain may be due to acute gastritis, to tabes dorsalis, perforating gastric ulcer, angina pectoris, lobar pneumonia, and a variety of other maladies. The determination of the cause of these symptoms depends in large measure on the factors just outlined. We associate certain of its qualities with certain pathologic conditions in certain organs. We thus obtain a lead and having now an organ under suspicion seek further evidence by delving into the history for other symptoms referable to the same part, but if we do not have an adequate knowledge of the manner in which disease affects the structure and function of organs, we are greatly handicapped. We cannot ask logical questions because we do not know what to ask.

Our investigation of the past is carried out in the hope of bringing to light recollections, of some incident, attack or disease which might have a bearing on the present condition. As an instance of this might be mentioned the fact that a careful search into the past occasionally will uncover a single attack of gall stone colic, long since forgotten, in a patient who years afterward is under treatment for hyperacidity, gastric neurosis, or some other reflex or ill-defined digestive disturbance. The manifestations of the gall bladder disease have been obscured by the functional symptoms secondary to the underlying pathology. The evidence of the single attack directly referable to the gall bladder gives the clue to the diagnosis.

Another field of investigation, the importance of which is being realized more and more each day, is the social history. It has to do with the habits of the patient, the occupation, the daily life, and in the broadest sense, his reaction to his environment. Maladjustment to surroundings causes a variety of ailments. In organic cases knowledge of environmental conditions is of considerable value—in functional cases it is of paramount importance. Unbalanced diet, lack of

sleep, occupation, with its hours and its demands, lack of recreation, conditions in the home, abuse of alcohol, tobacco and drugs, all play their part in the production of disease. Such information, being of a personal nature, is often hard to obtain and is notably inaccurate unless the patient has implicit confidence in the physician. Care must be used in its evaluation. It is not sufficient to ask a man his occupation and be satisfied with the answer "mill hand." We want to know just what he does and when he does it. Once a patient told me that he was a "newspaper man." I visualized him, night after night, enduring the nervous stress and strain of the city room. He sold newspapers at a corner stand.

A moment ago I stated that this social history is of paramount importance in the functional case. Particularly is this true with respect to that type of patient known so well to all of us—whom we call the neuresthenic. These sufferers—and I use that word intentionally—present symptoms directing our attention to the nervous system, to the cardio-vascular system, invariably to the gastro intestinal tract. Usually there are complaints referable to every part of the body. Frequently they have existed for years—occasionally they have but recently appeared. Sometimes they suggest organic disease but usually they are so diverse, so atypical, that one cannot associate them in his mind with any pathologic condition. Physical examination, laboratory analyses, X-ray studies must be carefully carried out. When all the evidence is at hand and there is none pointing to organic disease—we call the symptoms functional. We aver that they are of mental origin, and we label the patient a neuræsthenic, a psychasthenic or an hysteric. Here is our diagnosis, but if effective treatment is to be hoped for the underlying causes of the symptoms must first be understood. How do we find out what they are? Our physical methods have been exhausted. It is a question of history taking. It is not a five minute proposition—five hours would be a closer estimate. We do not ask "What's worrying you?" and remain satisfied with the inevitable reply "Nothing." We attempt to penetrate the defense with which the patient is protecting his hypersensitive feelings. It is a task which requires perserverance, diplomacy and tact, but once the mask has been penetrated the fund of information obtainable is remarkable. We must probe the details of social life, of business life, family life, and sex life. We must learn of the likes and the dislikes, the loves and the hates, the hopes and the ambitions, the idols and the ideals, the dreams and the nightmares—the fears and the dreads. When this has been done we have a much clearer conception of the factors underlying the patient's condition and are in a position to treat and treat intelligently. No longer are we put to the necessity of giving the patient some tincture of gentian and telling him to "go home and forget it." Need I call your attention to the fact that history has put us in this enviable position?

Last winter I saw a young married woman of twenty who was sent to me for lung examination. She was shortly to have an operation for hyperthyroidism with ether anesthesia. She had the nervousness, the palpitation, the rapid heart, the gastro-intestinal symptoms,

the loss of weight. She also had a hacking cough which had brought up the possibility of pulmonary tuberculosis. My impression on listening to her narrative was that the condition was not hyperthyroidism but neurosis. There were several features in her symptomatology which did not fit into the hyperthyroid picture. It took me three hours to get her history. I say "get" intentionally. I had to work for it—for at first the patient was reluctant to discuss her personal affairs. What were the salient features? She was a young housewife, not yet 21, who worked from five in the morning, when her husband went to work, until six in the evening when supper was over. She had two children, both very young and requiring much attention. Her mother lived around the corner, and instead of helping with the children, spent most of her time complaining about the brutality of the girl's husband in causing his wife to have two children in three years. Her sister, who had worked as a nurse for a time, constantly suggested that the hacking cough was probably tuberculosis. Her husband was industrious, honest, and devoted, but he arrived home from work each night too tired to suggest taking the wife out in search of entertainment. There was a sex problem, and there was a conscience badly stricken because of failure at confessional to confess certain acts which she believed were wrong. Is there any wonder that this girl was nervous, lost weight, had some palpitation, and numerous other symptoms? Would removal of her thyroid gland relieve her? There was a way out of the religious problem, the sex problem, and the overwork problem. The sister was informed that there was not the slightest suspicion of tuberculosis, the mother was detailed to look after the children every afternoon while her daughter slept, and advised to be thankful that she had a son-in-law who was honest, sober and industrious. A few weeks ago I was told that the patient had no more symptoms.

All of the pertinent facts are seldom obtained if the examiner follows a stock history form and merely asks a series of listed questions. The interview becomes a matter of routine, the answers mechanical, and the opportunity of following out the natural leads is lost. The personal touch is lacking and its absence reflected in the patient's responses which may be guarded, and which, since they lack guidance, often fail to convey valuable information. Medicine cannot be practiced according to formula. Each patient is a separate problem—no two are alike and one seldom finds them labelled.

As the various instruments of precision, particularly the X-ray machine, have come into more general use, and as serologic and bacteriologic procedures have advanced, there has developed a growing tendency on the part of many physicians to resort to these diagnostic aids to the increasing exclusion of the more strictly clinical methods. Patients are rushed off for rœntgenologic examination on the mere hint of gastro-intestinal symptoms, when there have been no inquiry into the nature of symptomatology, no careful physical examination, and no analysis of stomach contents or stool. If a patient develops a cough, that seems to be sufficient indication for X-ray examination. A few months ago I saw an extremely ill man on the twelfth day of an attack of lobar pneumonia. With great pride his physicians

showed me a series of Rœntgenograms of his chest taken every other day since onset. They were excellent plates but of what value were so many in relation to diagnosis, prognosis or treatment? In the minds of the laity the X-ray is infallible, it is capable of revealing the presence of any diseases and its findings are absolute. Some physicians, although they may know the limitations of this valuable diagnostic asset, seem to nurture this attitude and are all too content to shift the burden of diagosis to the X-ray specialist. Some rœntgenologists make diagnoses on the basis of their own findings often because they have been forced to do so, by the demands of the men who are sending them work, but the most dependable rœntgenologist tells us what a lesion might be—not what it is. His word is not always law—it is a paragraph in the law.

What is true of the X-ray applies equally well to other instruments of precision, to the laboratory and to the physical examination. An electro-cardiographic tracing showing auricular fibrillation indicates myocardial damage; it fails to show its cause—or its degree. A normal electro-cardiogram does not rule out heart disease. A negative Wassermann reaction does not exclude syphilis; a positive may be false. A systolic murmur in the heart does not always spell mitral insufficency—nor a rale in the chest pulmonary tuberculosis. All of the evidence which our tests bring out we must interpret in the light of what we have learned about the patient's symptoms.

In two important types of heart disease, angina pectoris and so-called effort syndrome, or irritable heart of soldiers, one usually finds nothing of importance by physical or laboratory examination. Both show cardiac pain. Wherein lies the differential? How do we distinguish these ailments from each other and from other conditions causing thoracic or abdominal discomfort? By history and history alone. The symptomatology of angina is quite clean cut. Yet how frequently each week we read in the daily newspaper of sudden death from acute indigestion! In other types of heart disease, history is receiving more attention than was the case a few years ago. We are in an era of functional pathology—structural pathology no longer commands all of our attention. Whereas previously we judged the condition of the heart almost solely on the quality of its murmurs, now we turn to the history. The field of cardiac response, the ability of the organ to meet the demands put upon it, is the index of cardiac condition. From the patient we learn the degree of activity required to produce symptoms, and we pass judgment accordingly.

The failure of so many physicians, particularly the younger ones, to have an adequate appreciation of the relative importance of the various features involved in diagnosis lies unquestionably with the medical schools. They offer courses in physical diagnosis, in microscopic diagnosis, and in X-ray diagnosis. They have demonstrations of electro-cardiographic work and basal metabolism determinations, but in none of the schools do I know of a course in history taking. Students spend hours percussing the borders of the heart, more hours listening for the elusive rale or, with stethoscopes over the trachea, harkening to the sound of bronchial breathing. When are they shown just how to dig down into a patient's past or present illness for the

purpose of eliciting hidden or forgotten symptoms? The answer is: they are not. It is done by some individual teachers in their own clinics, but this is not universal practice.

One finds the same weakness in the hospitals—the teaching institutions as well as the others. Who takes histories? The senior interne? Never! The attitude in almost every hospital with which I have been connected seems to be that the history is a chore—an unpleasant task to be passed (like the proverbial army buck) to some one lower down in the scale of relative importance. If there is a junior interne—the history is assigned to him, and he in turn assigns it to a fourth year student, who passes it along to a third year student if there is one about. At all events, whoever finally takes the history bemoans the fate which has assigned this chore to him and approaches it with neither enthusiasm nor interest. The surgical services of a certain hospital each have a fourth year student who acts as so-called clinical clerk—a sort of assistant interne. It is the duty of these young men to take the histories and perform the physical examination on all cases admitted. This is classed as routine work. The one thing which clerks are not permitted to do is the local examination. Only the senior interne is allowed to describe the tenderness or spasm in the R. L. Q. or record as official his estimate as to whether the mass in the epigastrium is the size of a grape fruit or only as large as an orange. In more than one institution patients are submitted to long, hard operations with the word of a fourth year student that heart and lungs are normal. Who can discover impending angina pectoris with a stethoscope? My wonderment is not that mistakes occur—but that so few occur.

Last fall a class of third year students was given a six weeks course in the essentials of history taking. I devoted an hour a day for six weeks to the first group of men, then sent them to one of the dispensaries for practical experience. Some time later I asked this section what progress they were making. The answer was almost uniform: "The dispensary doctors tell us not to bother with such histories." Such an attitude must change. Students must be taught that other diagnostic methods are not of value except when taken into consideration along with symptomatology; that a history is something more than a five-minute recital by the patient of a few of his symptoms and many of his theories. Without a clear conception of the subjective sensations which pathology in an organ can produce, one cannot secure an adequate history. It is both an art and a science—it is never a chore.

Let me close by recounting for you a conversation I once had with a leading internist in Boston, a man who is generally conceded to be one of the most canny diagnosticians in New England. He said to me: "People ask me why I never have an assistant. The reason is quite apparent. I send my patients to others for X-ray and laboratory studies; a physical examination takes but a moment. Most assuredly I would trust my histories to no one."

DISCUSSION

THE CHAIRMAN: I want to thank Dr. Adams for coming and for giving us this very valuable paper, and shall ask Dr. Lapham to open the discussion.

DR. MARY LAPHAM, Highlands: I do not know why I should open this discussion. The matter is so perfectly set forth that it needs no discussion. I have found that one of the greatest faults I have is to desire to shirk the history. They never want to tell me what I want and I get tired of digging for it. Pretty nearly a year ago I made a very signal failure not only in diagnosis but in treatment, which cost the patient a good deal in both time and money, simply for this one reason, that I did not pay enough attention to the history. It was a case of pyloric stenosis characterized by severe spasms. Living on the Blue Ridge, I had no equipment to study it and you know what equipment means in these cases in diagnosis; so I didn't pay enough attention and took the patient's word that all the work that had been done showed no evidence whatever of any structural change. I took the patient's word and disregarded the history.

DR. I. W. FAISON, Charlotte: I was glad to hear the paper of Dr. Adams. I heard him talk two years ago and found him thoroughly able to talk and with sense enough to say the right thing. He has come back here and said something that is worth while and of value to all of us, and it is something that you younger men in the profession should heed. We older fellows were taught more that way 40 or 45 years ago than the younger men are in the schools today. I do not doubt that the older men in the profession are better diagnosticians and doctors than the younger men. I say that with every degree of kindness, but I believe it.

The thing that worries me is when a man comes fifty miles to see me and begins to lie to me when I question him; then he goes away thinking that he has fooled some one. That has been my great trouble and that is the reason I fall down on the history now and then. I cannot understand why a man will spend time and money and then do everything he can to keep you from finding out what is the matter. That has been my experience. If he has syphilis he will lie to keep you from finding it out, and if you tell him he will go away and say that he has not. I hope the younger men will profit by this paper.

DR. H. L. BROCKMAN, High Point: From what Dr. Faison said, I hope that I may be considered an old man. (Laughter.) I never like to give an opinion of a patient unless I have taken the history myself. Sometimes I am called upon to do that. Doing mostly hospital work I am in position to spend probably a little more time with each individual patient and go over him more thoroughly, possibly, than an outside man could. After taking the history and making the diagnosis, I am able to follow the course of the disease until the patient is discharged from the hospital, usually a period of from ten days to two or three weeks, and to see

if I am correct in my diagnosis. I unquestionably place the history as the most important of all diagnostic methods that we have at present.

Dr. E. J. Wood, Wilmington: Mr. Chairman, the gentleman's paper sounds so much like Sir James MacKenzie himself that it is hard to believe you do not see the man. It is so largely what Sir James MacKenzie stands for, tempered with a little more judgment and scientific discrimination than Sir James was wont to display in his latter day, that I particularly appreciated and enjoyed it.

The Chairman: We all agree with Dr. Wood's opinion of this paper.

Dr. Robt. F. Leinbach, Charlotte: I am certainly delighted that Dr. Adams, whom we know so well, has come here to give us a paper on such an important subject.

We often take a careful history but very often after arriving at an opinion on the subject, as the diagnosis in that particular case from the examination that has been made, we do not always carry that diagnosis back and check it up with the history to determine whether the diagnosis corresponds with the natural evidence of that disease as indicated by the history. I think that this question that Dr. Adams has brought up is most vital and it probably shows that the last refinement in diagnosis is to make the diagnosis which we arrive at as the result of physical examination coincide with the natural history and evolution of that disease as we know it.

Dr. J. H. Williams, Assistant Physician State Sanatorium: I agree as to the importance of Dr. Adams' paper. There is one point that I do not think is mentioned in the history, that is its value in the prognosis of a given case. An examination may make a diagnosis, but the history helps to decide whether that case is acute or chronic and what the probable prognosis would be in the case.

Dr. D. Heath Nisbet, Chairman: I would like in this connection to emphasize one point that Dr. Adams brought out, and that is in regard to calling angina pectoris acute indigestion. I think that is a very widespread mistake we all make at times, and in that case a history of any kind, even the slightest history, will bring out that this is a heart rather than a digestive condition. I believe that all cases of elderly people dying of so-called acute indigestion are really cases of angina pectoris and aortitis.

Another thing, I have recently seen two men around fifty who began to complain of digestive disorders for the first time. We all know that this is the cancer age. These men gave histories of stomach upsets over a period of about six weeks. If we had gone on the histories alone we might have been tempted to give them some little medicine and diet in the hope that it would help them. In both cases the X-ray showed carcinoma which had advanced so far that it was

inoperable. That brings out the point that Dr. Adams made, that there should be a careful history in correlation with careful examination of all cases.

ADAMS-STOKES SYNDROME—EPILEPTIFORM CONVULSION DUE TO HEART BLOCK

J. P. Munroe, M. D., Charlotte

The Adams-Stokes syndrome is a clinical symptom-complex in which there are epileptiform seizures or transient attacks of syncope or vertigo associated with a slow ventricular rate, the complex usually occurring associated with partial or complete heart block.

Heart block is an abnormality in the cardiac mechanism resulting in delay or absence of the ventricular response to the normal auricular impulse. The impulse being usually delayed or blocked in the auriculo-ventriculo node, also called the "bundle of His."

Normally, the impulse producing contraction of the heart begins in the pacemaker, the sino-auricular node situated at the junction of the superior vena cava and the right auricle. It travels through the auricular muscle fibres and causes contraction of the auricle. From the auricle, it is transmitted to the auriculo-ventricular node, and thence, through the branches of the bundle of his to the ventricles. Each auricular systole occurs in regular rhythm at a rate of about 72 to 80 per minute and is followed, similarly, in about 0.15 second by ventricular contraction.

In heart block, the impulses from the pacemaker fail either partially or totally to reach the ventricles and excite the usual rhythmic contraction. In the former event, there is partial heart block; in the latter, complete heart block. First degree heart block is slight impairment of the conducting tissue uniting auricle with ventricle; which causes a decreased transmission of impulses from auricle to ventricle, and thereby a retardation of ventricular responses.

Where the heart block is higher, the ventricles occasionally fail entirely to respond to auricular impulses, and this causes what is called "dropped beats" or second degree heart block. In a still higher grade, the ventricle responds to every alternate impulse from the auricle—this is 2:1 heart block. Still higher grades are 3:1 and 4:1 heart blocks. When no impulses from the auricle reach the ventricle, we have complete heart block. The ventricle then contracts in response to impulses originating either in the lower part of the "bundle of His" or in the ventricular walls. This results in a rhythmic slow contraction of 45 to 30 or less.

The causes of heart block are many: In childhood and in early life we have it sometimes resulting from acute infections as rheumatic fever, scarlet fever, diphtheria, pneumonia, and any acute fever causing myocardial damage. Of this group, rheumatic fever is decidedly the foremost cause and Sir Thomas Lewis gives

as his opinion that heart block is almost a common accompaniment of this disease, though the condition is usually one of mild degree and transient duration therefore easily overlooked.

However, rheumatic fever is also one of the important causes of chronic block of the severe grade. The type which we usually see in adult life. Syphilis, too, is an important cause, as are also the chronic degenerative myocardial changes as sclerosis, etc., repeated observations by many competent observers having shown that the condition of heart block was almost invariably only a part of a diffuse myocarditis.

The following case is one of advanced heart block having associated with it epileptiform attacks somewhat resembling petit and grand mal and giving us the condition known as the Adams-Stokes syndrome.

CASE. R. C. S. White, male, age 69, farmer. Seen first September 17, 1923, complaining of epileptiform convulsions. These attacks have been present since an illness in April, 1923, which was diagnosed as influenza and pneumonia. The epileptiform convulsions, which were usually preceded by some extra exertion or excitement, have been variable as to frequency and severity, sometimes occurring as often as 30 to 40 in one day, at other times omitting for several days. In a few attacks he has lost consciousness, fallen backward, and remained unconscious for several minutes. Usually, however, there was no loss of consciousness, merely a momentary sensation of faintness and uneasiness which soon passed off. These mild attacks frequently occurred in rapid succession, usually 8 to 10 in a series and were followed by headache. Since the onset of above attacks, patient has suffered from shortness of breath, easy fatigue, and inability to do any work; recently there has been edema of ankles and some dizziness on walking.

No pulmonary, gastro-intestinal, or genito-urinary symptoms of note.

Past Medical: He does not remember diseases of childhood; pneumonia in 1884; la grippe in 1905. all teeth recently extracted because of abscesses; denies venereal infection.

Family History: Negative.

Physical Examination: Shows a remarkably well preserved, slightly dyspneic white male of 69; no cyanosis, temperature normal, blood pressure 220/80. Head, eyes, ears, and nose negative. Mouth: Teeth have all been removed, pharynx negative. Neck: Moderate venous pulsation, rate roughly estimated at 100 per minute. Chest: Lungs negative except for numerous moist râles at both bases posteriorly. Heart: Apex beat sixth interspace, 2 cm. to left of nipple line; marked diffuse precordial heave; no thrill. Auscultation: Both sounds replaced by cardiac murmurs, double murmur at apex and aortic area; auscultatory rate 46 for full minute; rhythm regular; radial pulses synchronous; no deficit. On comparison with above venous pulse count, it will be seen that an approximate 2:1 heart block was present. Electro-cardiographic tracings taken the following day confirmed the presence of the 2:1 heart block. Abdomen: Liver not palpably enlarged, no ascites. Extremities: Moderate edema of ankles; knee jerks present but diminished. Blood Count: Negative. Urine: Sp. Gr.—1.020, trace of albumin; otherwise negative. Blood Wassermann; Negative.

DISCUSSION AND TREATMENT

The above case is unquestionably one of partial heart block with convulsions occurring during periods of asystole as a result of cerebral anemia. An interval of only 3 to 7 seconds without ventricular contraction is estimated as sufficient to cause syncope. Death not infrequently results in this interval or if the time is further prolonged. It is the transition period from partial to complete heart block which offers the greatest danger, for the interval before the starting of independent ventricular contractions is extremely indefinite and death not infrequently occurs. Once complete block is established, the patient may live almost a normally active life for years and the termination come, as a rule, not from heart block, but from the myocardial failure which results, primarily, from the generally damaged condition to the heart that produced the block.

I wish to emphasize again the point that the phenomenon of heart block should only be considered as one evidence of a more or less diffuse myocardial pathology, for this is almost invariably present.

The treatment of heart block is indicated by the underlying conditions. On the above patient 1/33 grain of atropin was first tried. Atropin tends to increase the conductivity in the auriculo ventricular node and has been known to lessen and in some cases remove the block when of a functional character, functional block being dependent upon the extramural or vagal mechanism. No effect was noted in the ventricular rate by the atropin stated above, but the patient was made much more comfortable by it, and the blood pressure was reduced to 170. The day following the first dose of atropin, I gave him one ampule of digitaline hypodermically because of the decompensation, there being edema in hands and wrists. Following this there seemed to be some improvement in the general condition without any change in ventricular rate, so I determined to risk an additional dose of digitalis by mouth. This came near proving disastrous, for the patient had convulsions more or less continuously for 24 hours. This last series of convulsions seems to have been the result of the digitalis, but its use was justified by the decompensation present. However, digitalis is very dangerous in cases of incomplete block, for it increases the block, and frequently changes an incomplete into a complete block. And, as I have stated above, it is this transition period that is fraught with greatest danger. Where the block, though, is already complete, digitalis can frequently be used with beneficial results in supporting the failing myocardium. The patient was shortly returned to his family physician with instructions relative to general care, and, by following these, I understand he is now living practically a normal, though carefully regulated, life.

DISCUSSION

Dr. F. D. Adams, Washington, D. C.: I enjoyed very much hearing Dr. Munroe's paper. Particularly was I interested in his

discussion of digitalis and its effect in heart block. I have been taught that its use in this condition is rarely dangerous and I agree that it should be tried, albeit with caution.

Dr. Munroe brought out one fact of paramount importance, namely, that heart block is simply one of the manifestations of a diseased heart and that one should pay less attention to individual lesions, such as the sytolic or the diastolic murmur, and think more of the heart as a whole, particularly with regard to its ability to do its work. The heart men are constantly trying to impress upon us that one should gauge the efficiency of a heart chiefly on the basis of its ability to meet the demands made upon it.

One question occurred to me as Dr. Munroe read his paper—that is why, if he gave digitaline intramuscularly in considerable doses without untoward effect, and then happened to get more convulsions when smaller doses were begun, he should blame the return of the convulsions on the digitalis. It might not be absorbed for a day or two, and I would like to ask Dr. Munroe if the convulsions might not more readily have been coincident rather than the result of the digitalis therapy.

Dr. S. A. Stevens, Monroe: I would like to ask Dr. Munroe whether the convulsions spoken of were the result of or a part of the heart block, or whether they were coincident; in other words, what part the convulsions played in this case—whether the convulsions were a symptom of the heart block.

Dr. Munroe, closing the discussion: Dr. Adams has raised a pertinent question. If the first dose of digitalis given hypodermically did not produce damage, why should the following comparatively small amount produce convulsions? It means probably the cumulative effect of the digitalis, or it may have been accidental.

The blood pressure, which had come down from 210 to 170 after the first dose of atropin, went up again to 220 under the influence of the digitalis. That may have been an accident, too. Digitalis, as we know, strengthens the heart's action, but in heart block it does not remove the irregularity.

Dr. Stevens has asked another important question, which I thought I had answered in my paper. Anemia of the brain resulting from the heart block is the cause of the convulsions. The brain does not get enough blood to function properly. The person gets dazed, in a sense. One man said, "I feel as if I were going up in the air."

A STUDY ON THE ETIOLOGY OF PERNICIOUS ANEMIA*

EDWARD J. WOOD, B. SC., M. D., D. T. M. (ENG.)
WILMINGTON

In this communication the following claims will be set forth and the experimental evidence which seemed to justify them:

1. The fact that sprue and pernicious anemia are one and the same disease, due to a common cause, and differing from one another only in secondary characteristics probably justifying the division into two separate and distinct types of the same condition.

2. Both sprue and pernicious anemia, being one and the same disease, are caused by a yeast identical with or closely resembling the monilia psilosis (Ashford) which was found by Ashford in Porto Rico in sprue and also in yeast-risen bread of native kind.

3. The monilia psilosis, which is regarded in this work as the specific cause of pernicious anemia, has been repeatedly recovered in pure culture from the pus of pyorrhea and proves truer to form and probably more virulent than when recovered from the gastric contents or the feces.

4. The exact study of all pyorrhea, with the very radical treatment of those cases found to owe their origin to the monilia psilosis, just as a malignancy would be dealt with in comparison with a benign condition. That is, when pyorrhea is not due to a monilial infection the dentist exercises what conservatism he has practiced in the past. In the presence, however, of the organism under discussion a radical procedure is instituted with fair outlook for success. It must be clearly understood that all monilial pyorrhea does not result in pernicious anemia and that the absence of teeth and pyorrhea does not exclude pernicious anemia, the infection of which was engrafted in the small intestine before dental interference was instituted.

5. The explanation of the overlooking in the past of what is a very easily discovered infection is to be found in the nature of the culture medium used for the present work. This fact opens up many new lines of endeavor in practically all branches of the medical profession. Already the bronchomycoses have been found in this state in this way and this is only an indicator. Hereafter no study of any unknown material for micro-organisms will be complete until the material has been inoculated on this intensely acid medium. The results will be surprising and often amazing.

The position of sprue in medicine has been a very peculiar one. There were many able clinicians who refused to recognize it, much to the chagrin and annoyance of authorities on tropical diseases. A study of the history of sprue shows that it was a recognized disease-entity before Addison's original description, antedating this over half a century, and therefore was even much older when Biermer undertook to revise the facts relating to Addisonian anemia.

*From the Clinical Laboratory of the James Walker Memorial Hospital.

It had, then, a well established place in medicine when the term *pernicious anemia* had never been uttered. The colonial medical officers were young men usually, and probably better skilled as parasitologists and epidemiologists than as experienced clinicians, and to them it owes its place in medicine. It is not difficult to understand how it remained in the literature as a distinct disease-entity even after the work of Addison on anemia had been published and accepted.

My first experience with so-called sprue was about 1910, when this state was so terribly cursed with pellagra. At that time there were certain conditions attended with diarrhea and sore mouth given the unfortunate title, "Pellagra-sine-pellagra." These cases justified the position which I took at that time in refusing to accept the diagnosis of pellagra in any instance without the presence of the skin lesion or a very definite history of it. Had the blood been carefully studied and the observer unhampered by traditions the disease would never have been confused with pellagra, for the diarrhea was distinctly different in the two, the blood in pellagra was practically unaffected, and in sprue there was no skin lesion but an anemia of so marked a sort that it was not less in extent than even true Addisonian anemia. As time has passed, more and more have I experienced difficulty in differentiating between sprue and Addisonian anemia. The difficulty, rather than lessening with experience, has increased until finally I found myself utterly unable to make the distinction. In some cases a diagnosis of sprue would be made and when the patient returned for observation a revision was necessary and the case classified as pernicious anemia. Only recently a case seen by me six years ago and diagnosed as typical sprue returned to one of my colleagues, who has very correctly diagnosed it as pernicious anemia. A mass of evidence has accumulated in my records during the last decade of just this kind, which seems to well justify me in my conclusion that sprue is pernicious anemia, but a slightly different type. Clinically the nature of the remissions, the blood picture, the nature of the mouth and general digestive symptoms furnish abundant justification. One of the objections raised to this view is that sprue is curable while pernicious anemia is not. Recently I had return a patient whose diagnosis eight years ago was sprue. I had followed her by correspondence throughout the intervening years and there had been no return of her symptoms. I had recorded her as a cured case of sprue, but she now returns with a recurrence or an exacerbation. In only one instance do I feel reasonably sure of a cure of sprue and the case is yet to be investigated before finally being classed as cured. I saw this patient in 1917 with R. C. Sadler in Whiteville. She was a young woman who, before seeing me, had had all her teeth extracted because of pyorrhea. I would probably have opposed such a step had I been consulted. She had, however, followed better advice and if she is cured it seems reasonable that the dentist was responsible.

Clinically, then, sprue and pernicious anemia have become so merged into one another that the line of demarcation cannot longer

be found. One of the outstanding differences has been the lack of a neurological picture in sprue. It must be stated that this lack is one of the chief reasons for the justification in regarding sprue as pernicious anemia of slightly different type. However, I have recorded at least three cases of definite neurological complications in sprue. Doubtless many more instances will be recorded as the condition is sought. Recently in Virginia I saw a patient, a native of that state, who had lived for eight years in Porto Rico. For two years in Porto Rico she had been regarded as a case of sprue. She told me that for eight months she had been annoyed by sensory disturbances in her hands and feet. Examination revealed loss of the spinchter control of both bladder and bowel, loss of the abdominal reflex, extensor planter response (Babinsky's sign), greatly exaggerated tendon reflexes with ankle clonus, almost complete loss of the vibration sense and a great diminution of tactile sense in the lower half of the body. With the ophthalmoscope I was able to find old hemorrhagic areas. The diagnosis of subacute combined degeneration of the cord was perfectly apparent. In addition there was a bulbar palsy which likely explained her sudden death a few days after observation. The stomach contents showed in this case a complete achylia gastrica, as would be expected. The blood picture showed a preponderance of over-sized red cells, all the required variations in size and shape of these cells together with variations in staining reaction. Added to this was the presence of megaloblasts. It was evident that the case was one of pernicious anemia; it was also evident that it was a case of sprue, which diagnosis was justified by the type of sore tongue and diarrhea. It was a case in which the diagnosis depended on the geographical location. In the tropics it was a typical case of sprue; out of the tropics it was a typical case of pernicious anemia. I can hear my audience say that it is still not impossible for a patient to be the victim of more than one disease. There are numerous instances in the sprue literature of the disease being complicated by pernicious anemia, of the disease developing into pernicious anemia, and of the advanced stages partaking of the nature of pernicious anemia. It is a difficult matter to present a satisfactory line of argument to carry my point that the patient in question was the victim of one disease only. It is really a matter of clinical discrimination. Only a painstaking review of the history and physical findings would suffice to settle this point. As I see it, the process is the same in both conditions. In sprue the brunt of this process falls by selection on the small intestine and the mouth, while in pernicious anemia the brunt falls on the stomach and nervous system and to less degree on the mouth. In many cases there is a variation in these fixed types and a tendency to a gradual merging of the types, so that it is often difficult to draw the line.

Too frequently the intestinal symptoms of pernicious anemia are lost sight of, though persistent diarrhea has been recorded time after time. It is, of course, true that in many cases there is constipation and frequently constipation alternates with diarrhea. There are cases with a complete lack of all digestive symptoms.

Even in sprue this may occur and the mouth may be the only part affected. Again, in sprue there may be diarrhea and the mouth escape. From the earliest exact literature of sprue fatty stools have held a prominent place in all descriptions. Wallenstein has recorded acholic stools in pernicious anemia and states that it indicates a disturbance of the fat resorption. I have recently made a routine study of fat in pernicious anemia stools and have been surprised to note the frequency with which an excess of crystals and flakes of fat is to be demonstrated by the Sudan III test. It must be clearly understood that in the sprue type diarrhea is a much more prominent symptom than in the true Addisonian type, and it is this distinction which largely makes up to type.

Achylia gastrica has been so universally observed in pernicious anemia that there are many clinicians unwilling to make such a diagnosis in the presence of free hydrochloric acid in the stomach contents. In sprue there may be normal hydrochloric acid in the stomach contents, there may be an excess or there may be a deficit. I have found it largely a matter of what stage of the disease is being observed. In one case, for example, I found a year before death free hydrochloric acid, but a short while before death there was achylia gastrica. It is my opinion that eventually achylia will develop in every case of sprue just as much so as in every case of pernicious anemia, but usually it develops later than is the case with pernicious anemia.

Sore tongue and mouth seem to have been generally forgotten in the accounts of pernicious anemia until recently, when there has been a happy return to this early observation. In the past it has been mentioned in great detail and much stress laid on it. Recently D. H. Nisbet, in an excellent account of the digestive symptoms of pernicious anemia, gave a good description of the tongue changes. It may also be taken as an equally good description of the sprue tongue.

One of the best arguments in favor of regarding sprue as a type of pernicious anemia is the positive Perl reaction on the liver post mortem. This test is relied on to settle the diagnosis when a case of profound anemia clinically cannot be classified during life with any degree of positiveness. It is the so-called Prussian blue reaction resulting from bringing potassium ferrocyanide and hydrochloric acid in contact with sections of the liver. It is an indication of an excess of iron resulting from the hemolytic process. When it occurs it is strongly confirmatory of pernicious anemia, for very few other conditions give it and they are rare—sprue is one and bronzed diabetes is another.

Much evidence could be brought forward showing the prominence of the hemolytic process in sprue. Urobilin is commonly present and is attributed to blood destruction. The high color index and the morphology of the blood cells add all needed evidence of this condition, which is probably the most distinctive peculiarity of pernicious anemia.

The bone marrow in sprue, as Sir Byron Bramwell has recently pointed out, deserves more study. He says that it is only reasonable to expect a disturbance of the erythropoietic process in any such anemia which is obviously due to the absorption of toxins from the intestinal canal. Manson-Bahr, who opposes the view of this paper, says in sprue it is *dark red* in color and in pernicious anemia it is *bright red*. He also says that in sprue the characteristic microscopic appearances of pernicious anemia are lacking. This does not agree with experimental findings to be recorded later.

The loss of weight, which is inconspicuous usually in pernicious anemia, is quite marked in sprue. This is a point of real distinction. The brunt of the process falling, as it does in sprue, on the small intestine, with the consequent diarrhea and loss of the larger portion of food consumed, results in actual starvation. The failure to utilize both fats and protein has long been noted in sprue.

The claim has been made that there is a lack of definite periods of remission in sprue. This is an error, for remissions are equally as definite and as long in one as in the other. In another place I record a remission in the sprue type of eight years' duration.

Since 1901 there has been an occasional mention in the literature of a possible connection between sprue and one or another of the blastomyces. Kohlbrugge was the first to make such a report. It was revived in 1914 by P. H. Bahr (Manson-Bahr), who thought his organism was a causative factor in sprue and was the monilia albicans (Oidium). Soon after this Bailey K. Ashford, in Porto Rico, described a monilia occurring in sprue which he regarded as the cause of the disease. He found definite points of distinction from monilia albicans and called his organism monilia psilosis. Ashford found the yeast in the feces of his patients and also in the centre of a loaf of Porto Rican bread of the native kind. Ashford did many animal studies and with his organism produced pathological lesions of a definite kind. His effort was to produce the mouth symptoms and diarrhea of sprue. Like all other observers of this branch of research he experienced great difficulty in producing any effect through the feeding of the yeast. He followed certain French experimenters who rendered the experimental animal more susceptible by a resistance-lowering diet. The one selected by Ashford was a malted baby food. Even then his feeding experiments were never quite what he wished them to be.

Feeling convinced that sprue and pernicious anemia were one and the same disease-process, and being disposed to accept Ashford's organism as the cause of sprue. I undertook to repeat the observations in pernicious anemia. At once. and with no difficulty, I recovered from the feces in pernicious anemia an organism which seems to be identical in every way with the monilia psilosis which is Ashford's organism of sprue. In 15 cases I have found the organism in the feces. Of this 15 only two are not victims of sprue or pernicious anemia. In only one case of known pernicious anemia have I failed to grow the organism from the feces, and in that case was able to get a growth from the gums. In 20 cases of controls I

have been unable to isolate the monilia psilosis from the feces. In the two cases in which the organism has been isolated and the patients are not affected with sprue or pernicious anemia I can only say that the clinical work has not developed far enough to offer a satisfactory explanation, though in both the possibility of pernicious anemia is quite a real one. It is important to note that, speaking generally and with only very rare exceptions, the organism is found in the presence of the disease but *is not found in its absence.* Mark W. Boyd and his associates, working in Texas, found the monilia psilosis in 50 per cent of their controls. I have no explanation to offer for this difference. Ashford had no such experience and I know of no other experience like that of Boyd. In a recent case of profound anemia in a study made for a colleague I found a hemoglobin of 30 per cent. The red count was three million. The appearance of the patient suggested pernicious anemia. The morphology of the cells was somewhat suggestive, but there were no nucleated red cells. Cultures of the feces were repeatedly negative for the monilia psilosis. The anemia is the result of uterine hemorrhage or a part of a cachexia of malignancy. The case is mentioned to show that a profound anemia state alone is not accountable for the yeast infection, nor does it result from such an infection.

The next development was the recovery of the monilia psilosis from the stomach contents after a test meal. Bread is not used in the test meal, to avoid a possible confusion. Shredded wheat biscuit is a good substitute and has the advantage of containing no lactic acid. The explanation suggesting itself at this time for this occurrence was the lack of free hydrochloric acid, as the case was a definite achylia gastrica. This was not satisfactory, however. for the next case contained a rather high degree of free hydrochloric acid and yet the yeast was grown in profusion. The organism is repeatedly and easily recovered from the gastric contents with as much ease as from the feces.

Feeding experiments were then undertaken. No effort was made to lower the resistance of the guinea pig nor was the manner of life of the animal altered in the least. The yeast was simply added to the regular diet. On the eighth day the animal died. Throughout the lungs and the liver were found isolated areas of white color which resembled tubercles but which were found not to be tuberculous but infectious granulomata. The most striking changes were observed in the blood cells of this animal. The infectious granulomata must be the same as the "white spots" referred to by Ashford in his animal inoculations.

The blood changes consisted in a great preponderance of oversized cells, all possible variations in the size and shape of the cells, and a very striking polychromatophilia.

Examinations of the bone marrow of the long bones showed a very red marrow. A control was used and the difference was very striking. In addition to the very red color, microscopically there was an increase in the nucleated red cells and in the myelocytes. The urine of this animal contained an excess of urobilin. The hemoglobin, which was 88 per cent at the start of the ex-

periment, was reduced to 62 per cent. It was evident that the animal had suffered from some hemolytic poison and the changes were strikingly those of pernicious anemia in so far as the blood, the bone marrow and the urine were concerned. This guinea pig's liver gave a positive response to the Perl reaction, the Prussian blue reaction, which, as stated above, indicates a hemosiderosis or excess of iron of hemoglobin origin resulting from some hemolytic poison. A control guinea pig's liver was used for this reaction and was found to be definitely negative. Certainly, if the Perl reaction occurs only in pernicious anemia, in sprue and in bronzed diabetes, it is reasonable to regard the process produced experimentally as pernicious anemia. The source of the yeast used in this experiment was a case of pernicious anemia where I made the diagnosis before any thought of a monilial etiology had been conceived. The only feature lacking in the disease produced was the lack of nucleated red cells. This seems to admit of the explanation that the animal was so overwhelmed that no reparative process on the part of the organism had occurred. It must be recalled that nucleated red cells are the ancestors of the red corpuscles and their presence indicates a process of replacement.

The next guinea pig was fed with a monilia psilosis from the feces of a case at the State Tuberculosis Sanatorium, and I am indebted to Dr. McCain and his associates for their co-operation not only in this case but in many more. Without their sympathetic aid the work would probably have been abandoned for lack of material. This case was tentatively diagnosed on account of the clinical picture. The organism recovered from the feces produced gas in the fermentation tubes of maltose, levulose and dextrose. It was in every way a typical monilia psilosis. Litmus milk remained unchanged and gelatine was not liquefied. This organism was fed a guinea pig but it was a simple addition to the former and usual diet of the animal. For a time there were no symptoms produced, so it was thought probable that the organism had become attenuated. A culture was then intravenously inoculated into a rabbit. In 43 hours the rabbit died. Autopsy revealed no gross changes but the monilia psilosis in pure culture was obtained from the liver, kidney, stomach and feces. This rejuvenated organism was then fed to the guinea pig. The animal died and at autopsy the typical changes, in both blood and bone marrow, of pernicious anemia were found. The bone marrow showed great numbers of myelocytes and a definite excess of nucleated red cells. The myelocytes were chiefly of the neutrophilic variety. The color of the bone marrow is a brickdust red, though the animal is quite old. This is definitely an abnormality. The blood showed the greatest variation in the size of the red corpuscles with marked excess of oversized cells. The staining reaction shows the most remarkable variations in the intensity of the stain. There is a notable degree of poikilocytosis. If there was any difference, this animal showed even more characteristic changes than the former. There occurred in the lungs and in the liver a few of the granulomata which were recorded in the other animal—enough to indicate the identity of the

two processes but only this—and one was left with the feeling that the presence of these granulomata was not an essential part of the picture of the action of some overwhelming hemolytic process, which process seemed to depend on the virulence of the particular culture or strain being used.

Intraperitoneal inoculation of white mice resulted in a fatal peritonitis, but the mouse is more resistant than any of the other laboratory animals and in some instances more than one inoculation will be needed. In some instances the animal will be made ill but will recover.

All of the culture work on many animals fed the yeast in question showed conclusively that it was not a blood stream invader except when injected intravenously. Given by mouth it will eventually kill, but the time required varies greatly depending on the virulence of the strain and possibly on other intricate problems of resistance. In several instances animals are now taking the micro-organism by mouth daily without any apparent effect. In one case, cited above, the animal manifested symptoms only after the passage of the strain through another animal, thereby raising its virulence. It is obvious, therefore, that one has the right to assume that the monilia psilosis, after it reaches the small intestine, by its life history elaborates certain toxins which are hemolytic in nature. Following this line of thought, the monilia psilosis was grown in quantity and the growth transplanted to a 4 per cent solution of chemically pure dextrose in distilled sterile water. It was grown in this medium further for five days and then filtered in a sterile manner with great care. Cultures of the filtrate were inoculated and have remained absolutely sterile. This filtrate was given intravenously to rabbits every day, with a daily increase in the dose. This same culture given intravenously has caused death in 40 hours, but the filtrate had no such effect. However, the achievement of the whole work was established at this point of the experiment. The first blood film examined a few days after the inoculations were begun showed indications of definite blood changes. These changes were fairly complete but there were no nucleated red cells. This is not to be regarded as an essential in pernicious anemia, but in this work their occurrence was eagerly sought to complete the picture, hoping that the skeptic might thereby be silenced. The first inoculation was made on April 4th, and on April 13th there was found a lowering of the hemoglobin of about 15 per cent. The red corpuscles showed all the changes in size one could ask for in any case of pernicious anemia. Equally striking was the variation in intensity of the stain, in the presence of poikilocytosis, and finally in the presence of numerous nucleated red cells, some of which were of the megaloblastic type. This, then, completes the picture of the experimental production of pernicious anemia with a yeast which elaborates its toxins in the small intestine.

The question naturally arose at once, where does the yeast come from and how does it reach the intestinal tract? Ashford in Porto Rico, in his sprue work, suspected the native yeast-risen bread because he had been able to recover the yeast by cultures

from the center of the loaf. This, however, could not be a satisfactory solution, as I saw it, because children are not affected with sprue or with pernicious anemia, leaving out of consideration for the moment those controversial reports of the disease in little children. Evidently the organism was swallowed, for it certainly did not reach the intestinal tract by way of the blood stream. After becoming satisfied that faulty cookery could not be the determining factor I reverted to the question of oral sepsis, which William Hunter had so stressed in his studies of pernicious anemia, claiming a streptococcus as the offending organism. Cultures were then made from the gum of patients whose picture was that of pernicious anemia. To my amazement, at once and easily I grew from the gum the monilia psilosis, and it was one of the strains recovered from a diseased gum of a patient with pernicious anemia, whose feces also contained the same organism, that I was able to produce in the rabbit the complete picture of pernicious anemia as recorded above. In securing this growth from the mouth I found that by passing the platinum between the tooth and the hypertrophied gumtags the organism was to be obtained in abundance and with the special medium used in pure culture. This organism so obtained is truer to type than from any other source. It ferments with the production of gas maltose, levulose and dextrose. It does not liquefy gelatine and its does not change litmus milk.

It is expected, in the rabbits inoculated with the filtrate of the monilia psilosis, that the disease will be cured with the withdrawal of the inoculations. This should demonstrate to us what, in the future, should happen to our cases. When the offending organism is eradicated the disease will be cured, provided a culture of such proportions has not already gained a foothold in the small intestine. It seems reasonable to suspect the gum lesion as the entrance of the infection into the body. In the future, therefore, if cultures show that the pyorrhea is due to the incriminated yeast it must be dealt with as though it were malignancy rather than a benign condition. If the organism is not recovered in carefully made cultures the dentist would then be justified in practicing whatever conservatism he now is in the habit of employing. It is a striking thing that the cultures made from granulation tissue at the tooth roots have consistently remained sterile. The condition is, then, not an apical one but a gingival infection. Whether it produces a definite pathological lesion in the gums remains yet to be studied.

At once efforts should be instituted to find some remedy which will destroy yeasts in the body without harming the tissues. The organism evidently is of low resistance, being easily killed and often growing with the greatest reluctance and difficulty. These facts should be used in seeking a curative remedy.

As Bahr (Manson-Bahr) found a blastomycotic explanation fitted well into the picture of sprue, so even better does it fit into the picture of pernicious anemia. At once it should explain many of the atypical conditions, as, for example, the presence of grave

anemia without the presence of achylia gastrica, even though of a pernicious type. Many such problems should now yield to exact methods of study and many points should be soon settled.

It seems reasonable to predict that it is only a question of a short time before the *sine qua non* of pernicious anemia will be the recovery of the monilia psilosis or closely allied species from the feces or the gastric contents and also from the gums, just as now the tubercle bacillus is related to pulmonary tuberculosis. The failure to find the organism should not entirely exclude the possibility of the disease presence any more than now the failure to find the tubercle bacillus in the sputum makes certain the absence of tuberculosis.

In closing I cannot refrain from expressing my appreciation to my lifelong friend, Dr. Thomas M. Green, for his encouragement, advice and kindly criticism. Without it the burden of much work and frequent discouragements would have proven much heavier.

To Miss Lila Ward Koonce, in charge of the clinical laboratory of the James Walker Memorial Hospital in Wilmington, I am deeply indebted for much help and many valuable suggestions. Without her zeal, interest and enthusiasm the work could not have gone on, hampered as it was in being attempted far removed from a center of medical education and research.

DISCUSSION

THE CHAIRMAN: I think that we ought to congratulate ourselves that we have such a keen observer in our society. We are always glad to hear from him.

DR. ANDERSON: I am not competent to discuss this paper but I feel moved to say that we would better understand this paper ten years from today than we can possibly understand it now. I know very little about research work. I worked in laboratories many years ago and knew something of the technic then, but do not now. From the little I know I should say that this paper marks an epoch in medical history, not only of North Carolina but of this whole country, and that Dr. Wood has made a contribution in this paper that will live for all time and that has thrown light on these difficult problems that he has discussed that is wonderful. (Applause.)

I hope that we have men here who will go into the merits of the paper. I cannot, but I know that it is a wonderful contribution to our medical history.

DR. H. L. BROCKMANN, High Point: I do not claim to be competent to discuss this paper. If any of us were competent to do so, it would be impossible to enter into an adequate discussion at this time, as it is growing so late.

There are many cases closely resembling pernicious anemia which are not sprue, and of course all cases resembling either disease should be closely investigated. More commonly we find grave anemia due to hemorrhoids or cancer. I know of one particular case where a cotton mill worker had the habit of biting off small

pieces of thread and swallowing them. She kept this up and finally came to the doctor complaining of obstruction of her bowels. She also had marked secondary anemia. The doctor made a careful examination of the rectum and found a great mass of these threads in the rectum, more than a quart fruit jar packed full. The hemoglobin was about 19 per cent and the red blood cells were about the same proportion, somewhere in the neighborhood of one million. Such instances as this impress me with the importance of a very careful history, as Dr. Adams has emphasized, and of close clinical investigation of all points. When we meet with the condition under consideration, however, it is entirely possible that this is caused by such an organism as monilia. I hope sincerely that this thing will prove out, that we shall find that monilia is the cause of sprue and pernicious anemia, and that the two are identical.

Dr. F. D. Adams, Washington, D. C.: I have already taken more than my share of the Society's time, but I do want to seize this opportunity to congratulate this Society on having heard the report of such a remarkable piece of work as Dr. Wood has done. His clinical observations are impressive, but much more so is his report of a series of careful, well controlled experiments.

It is impossible for me, since I know little about sprue, to discuss this subject, but I can at least call to your attention the fact that the medical profession is coming to look on pernicious anemia as a general disease, rather than an ailment simply of the blood, and with this in mind has been searching for the etiologic factor. If Dr. Wood has succeeded in demonstrating the cause of the disease, it is a remarkable contribution to medicine. He has read one of the most beautifully worked up papers that I have heard in a long time, and irrespective of whether or not the work stands the tests of time and further experimentations, it is a remarkable example of what a man working alone, outside the well equipped institution, can accomplish.

Dr. Thomas M. Green, Wilmington: I had the pleasure of seeing Dr. Wood do much of his experimental work and helped him, as I could. I am not a laboratory diagnostician and had to take a good deal for granted, but he could demonstrate to me, as he could to any layman, blood changes, the test tubes, and the progress of the disease in animals. I am confident that he has found the cause of pernicious anemia and I believe that his work will stand with further investigation. The work was made very much easier by the development of the particular kind of culture medium which eliminated everything else but yeast. He is going to give you that later in another manuscript.

It seems to me that pernicious anemia is about the most hopeless condition that medical men have to deal with. It is more hopeless than tuberculosis and cancer. It is the only condition that you deal with that you have no remedy for whatever. In the last experiment, i. e., with the filtered culture, it was shown most conclusively that it is produced by a toxin, and it seems plausible that

a vaccine can be made that will act as a corrective. This work of Dr. Wood's seems far more important to humanity than the work of McLeod. We already had methods of treating diabetes and it was not hopeless, but in pernicious anemia you have a hopeless condition, and until something is brought forward you have nothing to offer the patient but an inevitable death. It looks as though we were on the verge of an important discovery, not only as regards pernicious anemia but the question of yeast in general. Dr. Lapham has just discussed a very interesting case of yeast in the lung. Recently I saw a man pronounced tuberculous and put on an anti-tuberculosis regimen, who cleared up in six weeks after extraction of teeth. No culture was taken from the gum, but the monilia psilosis was found in the intestine. Many cases of yeast infection are going about under an erroneous diagnosis of tuberculosis of the lung.

Dr. G. B. Crowell, Lincolnton: I feel that I would be repaid for coming here even if I heard but this one paper read. I have heard of Dr. Wood as being the foremost scientist in North Carolina. This organism is found associated with disease and it is not found in the absence of disease, and Dr. Wood's theory is also borne out by the fact that inoculation with this organism produces symptoms of the disease. I hope that Dr. Wood's further work along this line will substantiate his claim that pernicious anemia is an infectious disease, and that sprue and pernicious anemia are the same.

Dr. D. H. Nisbet, Chairman: I cannot discuss this paper from the laboratory point of view, for we have not investigated our pernicious anemia cases as Dr. Wood has. I do not dispute anything that he says, for what he says we take as 100 per cent.

I have recently seen two cases of so-called sprue, in people who had never been out of the state of North Carolina. Both originated in rather young people under thirty, in rural districts. In one case we did not suspect the sprue until we had treated her about three weeks, giving her everything under the sun that we could think about, trying to stop diarrhea. I got hold of Ashford's latest paper and put the patient on a diet low in carbohydrates. Up to that time for eight months she had been having fifteen to twenty stools a day. She went on this diet and in three weeks she was having normal movements. That patient is not cured. She is in a stage of remission—this is like pernicious anemia. The cases go along, seemingly hopeless and then gradually improve and stay seemingly well for months or years. The disease then returns and the downward trend then comes back. We examined the stools and found the monilia present.

In neither of these two cases did we find blood pictures which pointed to pernicious anemia. They had sore tongue and some of the nervous lesions.

The second case was that of a man who had diarrhea for several months and all treatments had failed to check it. Just from the

nature of the history and the fact that we had seen one other case, we suspected it and made a culture. We sent the culture to Ashford and we have letters from him saying that monilia are present in both stools. Whether these came from the gum or mouth I do not know. We have not worked out our cases in detail, as has Dr. Wood. We do not have the time nor the facilities. Dr. L. C. Todd, of the Crowell Clinic, has made the cultures for us and Ashford has verified his reports, finding by cultural and immunological tests that it is the same organism that he (Ashford) finds in his cases.

This is a very startling report by Dr. Wood. We know that he is a careful investigator and that he does not go off half cocked, so to speak. However, we must remember that his claims must be verified, and then the real problem of perfecting a serum or vaccine begins.

This is a very valuable contribution by Dr. Wood and we owe him a vote of thanks for his careful and painstaking work.

Dr. Wood, closing the discussion: I appreciate very much the kind way in which this work has been received. I had a good deal of hesitation in presenting it here because I know how each point seems. I appreciate the acceptance of it so graciously, because I want to tell you that I did not accept the proof of my own eyes when I saw it. I did not conceive that it could be true. I had forced on me clinical proof that sprue and pernicious anemia were the same thing, not only in one but a number of cases, until there could be no possibility of getting away from it.

I appreciate your difficulties in finding a clinical picture in sprue. I have had that experience too, in pernicious anemia. The work I am doing is giving me the feeling all the way through that we never diagnose pernicious anemia until it is about as advanced as tuberculosis when the cavity is as large as a baby's head. When we make diagnosis of pernicious anemia it is the tail end of a long existing condition and not the beginning.

THE USE OF INSULIN IN DIABETES

Claude A. Street, M. D., Winston-Salem

Diabetes is a disease in which the ability of the body to metabolize food is reduced to a greater or less degree. The most common symptom being glycosuria, it has long been looked upon by the laity and at least a part of the profession as a disease effecting the carbohydrate metabolism alone. It is true that the lack of the ability to metabolize carbohydrate, either to burn or store, it is the direct cause of the diabetic symptoms, but if the body cannot burn carbohydrate it follows that it cannot burn the 58% of carbohydrate in the protein ingested, and since it requires carbohydrate to burn any considerable amount of fat, the fat tolerance is also lowered to some extent. So diabetes must be considered as a disease of total metabolism, and the total calories in the diet must be taken into account quite as carefully

as the different food constituents. To prescribe a diet of limited carbohydrate and protein, and unlimited fat will not produce the desired results.

Dr. Allen speaks of diabetes as "the vestigium of a burnt out conflagration." Most cases are undoubtedly due to a pancreatitis which has injured a part of the insular tissue, then the functional strain of improper diet causes the remaining cells to degenerate, and the disease gradually becomes more severe.

The best treatment before the advent of insulin was that which kept the urine free from sugar and maintained the blood sugar at or near the normal level of 100 mgms. per liter. Patients kept in such condition, showed little if any downward progress in their diabetic condition. The difficulty arose from the fact that, in so many cases, the body weight had to be reduced to such an extent to reach this equilibrium between body weight and food, and the damaged pancreas, that the patients became invalids, and it was rarely ever possible for a diabetic to gain weight without a return of the diabetic symptoms. However, they rarely died of undernutrition, even on these necessarily extremely low diets. This was the only hope of the severe cases. If the blood sugar was allowed to remain very much above normal, the downward progress was much more rapid from the standpoint of the diabetes, and in addition the patient was subjected to the dangers of acidosis, infection, and gangrene, from which those on rigid undernutrition diets were relatively free, and even then it was not possible to maintain weight and strength very long in the severe cases.

Insulin, which is an extract from the pancreas of slaughter-house animals, while not a cure for diabetes, is a most spectacularly efficient remedy. Unfortunately it has not simplified the treatment of diabetes, but has made it somewhat more complex, since it is necessary to guard against hypoglycæmia as well as hyperglycæmia. By its use patients of any degree of severity can be restored to normal activity, and while they cannot "eat everything," they can eat all the food they need, and only the luxuries are denied them. Of the thousands of cases that have been treated, I have been unable to learn of a single case that has failed to respond promptly. Diabetics should be impressed with the gravity of their disease if carelessly treated, and the relative insignificance of it, if they take proper precautions. They should be urged to go ahead with their affairs and not be allowed to think of themselves as being handicapped in any way by diabetes.

Insulin enables the body to metabolize carbohydrate specifically. The carbohydrate when absorbed into the blood is in the form of glucose, which by the aid of insulin may be burned in the muscles or stored in the liver as glycogen, to be used later. The body is also enabled to store protein and build up the tissues, the ketones are burned or changed to non-toxic substances, the fat is burned to its normal end products or stored, the blood sugar is kept at a normal level, while sugar and ketones are abolished from the urine. The respiratory quotient is raised, showing that carbohydrate is being metabolized, and the basal metabolism is raised also.

Insulin is given subcutaneously in ordinary routine treatment, and this must be done by the patient or some one in the family or an attendant. Even children can be taught the technique very easily. They soon lose their fear of the needle and learn to put the insulin under the skin, not in it nor in the muscle because this hurts, and when an injection hurts any more than the prick of the needle just as it enters the skin, it is the fault of the technique. The syringes should be sterilized by boiling and the needles may be sterilized with ordinary rubbing alcohol. No cases of infection at the site of injection have been reported.

It is probably more effective when given twenty minutes to one hour before the meal, but in many cases it is found best to give it immediately before meal time when there is a tendency to hypoglycæmia, and as a matter of fact this seems to be the plan followed by most patients as it requires less time and inconvenience. Insulin comes in two concentrations, ten units to one c.c. and twenty units to one c.c., and it is very important for patients to be taught to observe the strength of the preparation they are using.

The amount of the dose must be determined for each individual case, but if every diabetic knew the good to be obtained from insulin, there would be very few who did not take it. The average diabetic though he may look well and have no marked symptoms, feels more or less sluggish and while he may be able to do efficient work he has to drive himself to do it. In these mild cases a small dose of insulin of perhaps twenty units per day, ten at morning and ten at night, with a little more liberal carbohydrate and protein and less fat, would give a sense of well being and security which would be a revelation to most of them.

In children, and the thin severe types, insulin should be used always. The first dose should be small. The unit used by Lilly at first and the one that is spoken of in most of the literature on doses was changed last October to the present unit, which is one-third stronger. Dr. Joslin advises that the first dose be one unit. Dr. Allen usually begins with five or even ten, morning and night. In a child or an emaciated patient the doses must be small at first as these patients are much more subject to hypoglycæmia than the well nourished adult patients. If there is a large amount of sugar in the urine and a high blood sugar the dose may safely be quite large to begin with, easily five to ten units twice daily. In the process of rendering the patient free from urinary sugar and bringing the blood sugar to normal, excess fat should be taken from the diet and forty to sixty grams each of carbohydrate and protein given.

The object should be to give the patient a palatable diet that will maintain the body weight a few pounds below the accepted standard weight for age and height. If the patient becomes too fat, the increased body mass will require more insulin and more food as well to sustain a larger body, and will also make the patient much more difficult to keep free of sugar in the urine and there will be more danger of the accident of acidosis.

During the process of desugarization one can usually determine the degree of severity to some extent, and then have a very fair idea

as to the amount of insulin that will be required. The dose may be raised as much as five to ten units per day in severe cases or one to two units per day in mild cases until the urine remains free of sugar. If the dose is eighteen units or more the best results will be obtained if given in three equal doses. Unless, as sometimes happens, there is a hyperglycæmia in the morning and a hypoglycæmia in the evening. In these cases many patients are given the largest dose in the morning, a smaller dose at noon, and a still smaller at night. The dose cannot be measured in terms of grams of carbohydrate or of total calories, but must be worked out by gradually increasing it until the patient remains sugar free on the desired diet. Few patients will take less than ten units daily, if they take it at all, and some may require 100. The average is between thirty and sixty. The requirement will depend upon a great many factors, among the most important being carbohydrate and total calories in the diet, body weight, severity of the disease and the activity of the patient.

Hypoglycæmia is a real danger at first, but patients soon become familiar with the symptoms and are able to take care of themselves, entirely too well sometimes, for they make their reaction the excuse for enjoying a choice selection of candy or other sweets which they are quite sure to have prepared. Thin, undernourished patients are more subject to hypoglycæmia than the fat robust type, and they collapse much more easily. I have known a severe diabetic, after he became fat and well nourished, to remain perfectly conscious with the blood sugar of twenty-eight mgms. per liter.

Hypoglycæmia may come from a number of causes. A patient may appear at first to be of a severe type and be given a large dose. After the acute symptoms have been kept under control for some time by treatment, the dose may be so large that hypoglycæmia will result. Diarrhœa is a very frequent cause, the food not being allowed to digest, vomiting the food may cause it, and the patient may intentionally take an excessive dose in order to eat a large meal.

The symptoms of hypoglycæmia are quite constant. In adults sweating is usually the most prominent, it was necessary for the patient mentioned above to change all his clothes, even his trousers, because they were so wet, after the reaction. The face may be flushed or pale, in children the pulse is usually increased and should be watched when there is suspicion of a reaction. As the reaction becomes more severe there is diplopia, the tongue and throat feel numb, speaking and swallowing become difficult and the sense of taste is diminished. The fingers become cold and the sense of touch less acute, the patient feels "all gone," and extremely nervous and finally confusion and delirium may come on, then collapse. Children are very apt to cry. They look worried and act abnormally. If they are eating, their movements will be irregular and erratic, and they may quit eating before they have finished their food. When the symptoms come on in this form they are easily recognized, but they are not always of this form. One patient whose reactions were usually ushered in by the common symptoms, after some rather strenuous exercise became nervous with no other symptoms. He had been well trained in the use of insulin but did not suspect what the trouble was; he

finally became delirious and excited and had to be restrained by force. He was given a small amount of sugar by his family although he protested against it. Then he collapsed and remained unconscious for more than an hour, returned to normal, and went about his work as though nothing had happened, feeling none the worse for the experience.

In general there will be very little trouble from hypoglycæmia, because the patients who take small doses are not in very much danger on account of the small dose. The severe cases who require large doses will usually carry high blood sugars and often sugar in the urine. There should be no fear of death during sleep, as patients are always awakened by the reaction. It is a common experience for patients to awaken wet with sweat due to the reaction.

The treatment is carbohydrate in some form, a glass of orange juice, a few teaspoonfuls of corn syrup, some candy or sugar, by mouth if the patient is able to take it. If the patient is not able to take it, it may be introduced by a stomach tube, or better, ten to twenty-five grams of glucose may be given in the vein, in a ten to twenty per cent solution. Sometimes a cup of coffee or broth will relieve the symptoms. Epinephrine, one c.c. of 1 to 1000 solution will aid in overcoming a hypoglycæmia, by throwing stored glucose into the circulation, but it is only a temporary measure and in very emaciated patients who have no stored glycogen it may do no good at all. The recovery is usually very rapid and complete and within fifteen to twenty minutes the patient should be feeling as well as though nothing had happened. Glucose for intravenous use is put up in ampoules ready for use by Eli Lilly Co. or it is not difficult to prepare. Patients should be instructed to have candy or an orange where they can get it at any time, day or night.

The physician who treats diabetes should be able to calculate a diet accurately in terms of grams of carbohydrate, protein, fat and total calories and should teach each patient to do so. For the patient, diabetes is a life-time proposition and he will save time and worry, and add much to his enjoyment if he is able to calculate his diet from the foods at hand and not have to live on stereotyped lists of food, and it will be much less expensive. There will also be much less chance of error in the diet, and an accurately calculated and weighed diet is necessary to obtain satisfactory results with insulin as well as without. The patient should have a diet scale and understand how to use it. The diet should be as nearly normal as possible. Some men advocate a high fat, low carbohydrate and protein diet. But I venture to say that no intelligent diabetic patient will follow such a diet very long after he understands insulin. Great numbers of severe diabetics who have become well nourished, now tend to become too fat and have to reduce the calories to such an extent that they can eat no fat except that contained in the meat, eggs and a small amount of cream. An ideal diet for an adult is 100 grams carbohydrate, 100 grams protein and 2000 calories. Some patients will not want so much protein and rarely will one want more, the usual range is between fifty and one hundred grams. Some patients take more than 100 grams of carbohydrate but it is probably not best to do so, as it

will require more insulin and will be more difficult to control. 100 grams makes a very good diet. Less is often given, but it need not be below 50 grams. 2000 calories will be too much for the average patient, after becoming well nourished, and will have to be reduced to 1600 or 1800. With such diets there is no danger of ketosis, they are very satisfying, the patient can eat anywhere without being conspicuous, and in the long run Dr. Allen believes the insulin requirement will be little if any greater than in high fat low carbohydrate and protein diets, although in its immediate glycosuric effect carbohydrate ranks first, protein second, fat third.

The patient should also be taught to test the urine for sugar, for which Benedict's solution is probably the most convenient and reliable, and when sugar appears in the urine the test should be made morning, noon and evening. If the evening test is not clear the diet or dose must be readjusted. Often the morning test will show heavy sugar while the evening test will be clear and the patient may even have symptoms of hypoglycæmia. When there is no tendency on a given basis to glycosuria the test may be performed less frequently, once a day on a total 24 hour, or single morning specimen. The ideal treatment would keep the urine free of sugar all the time and the blood sugar normal. Dr. Allen attempts to do this, and the Toronto group advocate it. Dr. Joslin insists on the urine being free of sugar but is less strict in regard to the blood. He says in speaking of this, "fortunately for our peace of mind we are not of those who have held that the blood sugar in diabetes must be kept at a normal level at all hazards. Too many patients have crossed our path who have resisted diabetes for many years with elevated percentages of sugar in the blood to allow us to accept such an extreme view. The maintenance of the patient upon a normal blood sugar is seldom attained with insulin. Insulin allows more food and enables its utilization to take place, but in the intervening hours before the next dose the blood rises higher than is customary with the undernutrition diet." Geyelen of New York allows slight glycosuria to guard against hypoglycæmia in children especially. Wilder of the Mayo clinic also allows slight glycosuria. Williams of Rochester allows higher blood sugar. Woodyatt of Chicago allows glycosuria in severe cases who have no tolerance to lose but requires normal sugars in recent mild cases. A good rule is to require the evening test to be clear at least. The need of blood sugar determinations is certainly less with insulin. The patients frequently have glycosuria and know their blood sugar is high, and often symptoms of hypoglycæmia and know the blood sugar is low. Still with blood sugar determinations the case can be more accurately controlled.

Coma should become rare with use of insulin, but there will probably be many cases due to patients omitting insulin from carelessness or a lack of insulin. They should be instructed to keep on hand a reserve supply of insulin, and if their supply runs out they should leave off all excess fat, cut the carbohydrate and protein one-third and call their physician at once. The danger of omitting insulin and taking food should be impressed upon patients as well as the danger of taking insulin and omitting food. There will also be cases in which

the diagnosis of diabetes has not been made and the physician will see the patient in coma on his first visit. If diabetic coma is suspected the urine should be examined for sugar and acetone bodies and the history of the patient investigated in regard to weakness, headache, loss of appetite, constipation, nausea, vomiting and difficult breathing during the preceding week. In coma the breathing is difficult with prolonged inspiration, of the Kussmaul type. The mouth and skin are dry, the feet and hands are cold, the temperature is subnormal, the pulse rapid and the eyeballs soft.

By contrast in hypoglycæmia there will be no sugar or acetone in the urine. The skin and mouth will be wet and the pupils dilated.

In treating coma no time must be lost. If the process goes too far the blood sugar may be reduced to normal, the acetone bodies gotten rid of but some irreparable damage has been done and the patient dies. Dr. Allen gives 25 units of insulin in the vein and 25 subcutaneously immediately and has given as much as 485 units in 24 hours. Dr. Joslin gives much less. He prefers to start with a small dose and not give more than 60 units in 24 hours. Carbohydrate in the form of orange juice or glucose should be given at least in proportion of one gram of carbohydrate to each unit of insulin, probably more is better as it aids in abolishing the ketones and furnishes fuel; preventing the burning of fats or protein which will produce ketones; and will guard against hypoglycæmia. Water must be given in large amounts preferably as much as six liters in 24 hours, by mouth, vein, rectum or subcutaneously. Glucose may also be given intravenously, and may be necessary at times. Sodium bicarbonate may be given in doses of five grams every two hours until forty grams have been taken in 24 hours. It may be given by vein in 4% solution if necessary. Large doses are harmful, and alkalis have not reduced the death rate in diabetes. The patient must be watched and the insulin treatment kept up until there is no tendency for the acidosis to return. If it is discontinued as soon as the blood sugar becomes normal the acidosis is most certain to return. And there may be a tendency to acidosis for several days but with insulin and liberal carbohydrate some protein and very little fat in the diet, this is soon overcome. The blood sugar remains normal, ketones are abolished from blood and urine. The alkali reserve is restored. The CO_2 combining power of the blood returns to normal as does the alveolar CO_2 tension.

Insulin has no specific effect on infections in diabetes. It simply reduces the blood sugar to normal and allows healing to take place as in a normal individual. In acute infections much more insulin is used. Sometimes very large doses are required, but when the infection clears up the dose can be reduced. In tuberculosis insulin is a distinct help because it permits the giving of much more food. With insulin the diabetic who has tuberculosis probably has as good a chance with regard to tuberculosis as the normal has.

In surgery the use of insulin makes it possible to prepare the patient for operation immediately without waiting to reduce the blood sugar by undernutrition, and it lowers the risk as the patient reacts very much as the normal. Some authorities advise a high carbohy-

drate diet before operation in order to have the liver well stored with glycogen to combat any tendency to acidosis by supplying energy and limiting the oxidation of fats.

DISCUSSION

Dr. D. Heath Nisbet, Charlotte, Chairman: In discussing Dr. Street's paper I want you to be at liberty to ask him any questions you want to. Dr. Street has had a training I don't suppose any other physician in the South has had. He has been under Joslin three years and under Allen four years.

Dr. H. L. Brockmann, High Point: I think a program at this season without a paper on insulin is altogether incomplete, and I am delighted at having heard Dr. Street's paper. My experience with insulin has been very limited in comparison with his, and I can not cover the ground in any way as thoroughly, but from the experience I have had I believe he has covered it most thoroughly. We have quite a few patients on the insulin treatment now. In the way we have been handling it, we get the patients in the hospital. Rigid supervision is absolutely necessary at first, for at least two or three weeks. We send the patients out then and let them take the insulin themselves. We have never had any trouble following hypodermic administration, given by the patient himself, and patients take it very readily. We get them back at least once a week for a period of two or three months. I want to ask Dr. Street if he approves of the method we use in guaging the diet. We find that patients have trouble in understanding such terms as grams, etc., so we use ordinary household words, as tablespoonful, teaspoonful and cupful.

Dr. H. M. Baker, Lumberton: This subject is of very great interest to every one of us and those of us who have had experience with insulin realize the great importance of Dr. Street's paper. He is better prepared than any other man in North Carolina today to talk to us on insulin, having had experience with both Dr. Allen and Dr. Joslin. It is a great opportunity for us to hear this paper. I heard a paper recently in which one of the men asked if there was any difference between the amount of blood sugar in this section and, for example, in Massachusetts. This investigator said that he had found it was a little higher in North Carolina than in some other States, and I would like to ask if the essayist has found any difference; also, whether insulin is of any value in temporary conditions, say in pregnancy?

Dr. L. A. Crowell, Lincolnton: My son has been treating some of these cases, and I have only incidentally observed the results. One patient, I remember, came into the hospital with his urine loaded with sugar. He could hardly get into the institution without help. I remember when he came in, he sat down on the lounge and was immediately given a very large dose of insulin. In less than two hours he began to improve. He stayed in the hospital two weeks, and left sugar-free.

We had another man who came into the hospital with diabetic gangrene of one foot. He was given a dose of insulin, and two hours after this his condition became very bad. In fact, he looked very bad and we thought he would die, but in a few hours he began to improve. His foot began to improve, and in a few weeks was entirely healed up.

Dr. F. R. Taylor, High Point: Two or three points came up recently in some of our work which have interested me very much. One of them is the importance of differentiating between glycosuria and lactosuria. Both give the usual copper reduction tests for sugar. Lactosuria is normal at least during a part of pregnancy, and especially immediately after delivery, before the breasts have secreted the milk. I know of a case where a nursing mother was about to be put on a very limited diabetic diet, before insulin became very common, but we found that she did not have diabetes; that it was simply milk sugar in the urine. I recently saw another thing of which I have no explanation. We had in High Point a case of scarlet fever in a small child—four years old—whose urine appeared to be quite heavily loaded with sugar. Twenty-four hours later the sugar had entirely disappeared, and has so far not returned.

Dr. Street, closing the discussion: It is very often possible to get a member of the family having a high degree of intelligence to take care of it, if the diabetic himself cannot. The plan you follow is one followed by Dr. Joslin. He is very urgent in insisting that everything shall be carried out accurately, but that is as good a plan as one could have, although he does not restrict the patient. Dr. Joslin says the test itself is not so important as what you do after it is ascertained that any degree of abnormality is present.

In regard to blood sugar in North Carolina, that does not mean anything. In any case normal blood sugar is around 100, and, if he made the tests himself, I would want to know on whom he made them. As to normal blood sugar being higher in one section than another, I think that is not possible.

In the condition of pregnancy where a patient is in a state of threatened convulsions insulin has been found to remove those symptoms entirely, at least in a number of cases. In regard to permanent results from insulin, of course, it is too early to be absolutely sure.

THE ESTABLISHMENT OF A STANDARD IN PROTEIN SENSITIZATION

Horace Mitchell Baker, B. S., M. D.

The Baker Sanatorium, Lumberton

The object of this investigation, the results of which we wish to report at this time was to determine the relationship of a normal reaction case as compared with a case presenting symptoms of protein or food sensitization. A great deal has been written on this subject in the last ten years but there is no mention in the

literature so far as I can find of a series of normal cases tested with the various proteins in comparison with cases showing anaphylactic symptoms.

This subject is one of the most fundamental and vital subjects that confronts the internist today—in that it touches upon every phase of medicine. It is possibly of more vital importance to the pediatrician than to the surgeon or internist. I wish to confine myself to the reaction of food proteins particularly. The possibilities locked up in a field such as this are almost fathomless in that such a large percentage of our people have some degree of food sensitization. The manifestations of sensitization are numerous and affect individuals differently. For example, sensitization to oatmeal may cause urticaria in one individual, eczema in another, asthma in another, while in another it may cause general gastric disturbances such as we see in small children with sudden high temperatures and a condition such as is commonly recognized as acidosis.

In all of our investigations we have accepted without question the reaction of these various proteins without contrasting our reactions on individuals with no anaphylactic manifestations, and I believe the reason why investigators have failed in this important field is because of our not having a standard by which we could judge the reactions obtained.

In taking up the study of protein sensitization in 1916 in one of the Boston hospitals this problem of determining the sensitization in normal individuals occupied my attention extending over a period of two years. With the problem in mind to establish (1) the incidence of sensitization in the normal child; (2) show the relative frequency of sensitization to the specific proteins; (3) give a standard by which results of the reactions on anaphylactic patients may be properly determined.

To carry out this test for the detection of hyper-susceptibility toward various proteins, the preparation of extracts are of fundamental importance. In order to get the best results it is essential that the preparations used should readily be held in suspension. They should be sterile and suspended in a non-irritating and readily absorbable diluent.

In the preparation of the protein extracts, the first obvious step is to avoid the use of chemicals which may form insoluble compounds with the proteins present or form new compounds which might lead to erroneous results. Consequently, the proteins of vegetables and fruits have been prepared as described by Woodhouse. The methods principally used were described in a previous study by Baker and Floyd on protein extracts in states of hypersensitization.

All proteins employed in this study were used on anaphylactic as well as on normal patients, so that a comparison can be made between the patients giving no anaphylactic symptoms and those with varying degrees of sensitization.

The method employed to determine sensitization was carried out in the following manner: The inner side of the forearm was cleaned with alcohol and ether, scarifications or scratches were made about two inches apart, allowing the oozing of serum only. The upper scratch was kept for a control. One or two drops of the protein in normal saline or tenth normal sodium hydroxid are placed on the other scratches and allowed to be absorbed. Both points of inoculation are examined at five minute intervals for half an hour.

Positive reactions consist of a raised urticarial wheal, surrounded by an area of redness of the skin, irregular in outline and usually from 6 to 20 mm. in diameter. The reactions described as questionable consist either of a slight elevation about the point of inoculation or of a small area of erythema. Such reactions are considered negative for diagnostic purposes. They are noted and repeated at a later time in that they may be positive or entirely negative on the subsequent examination. Negative reactions are those which do not differ from the control.

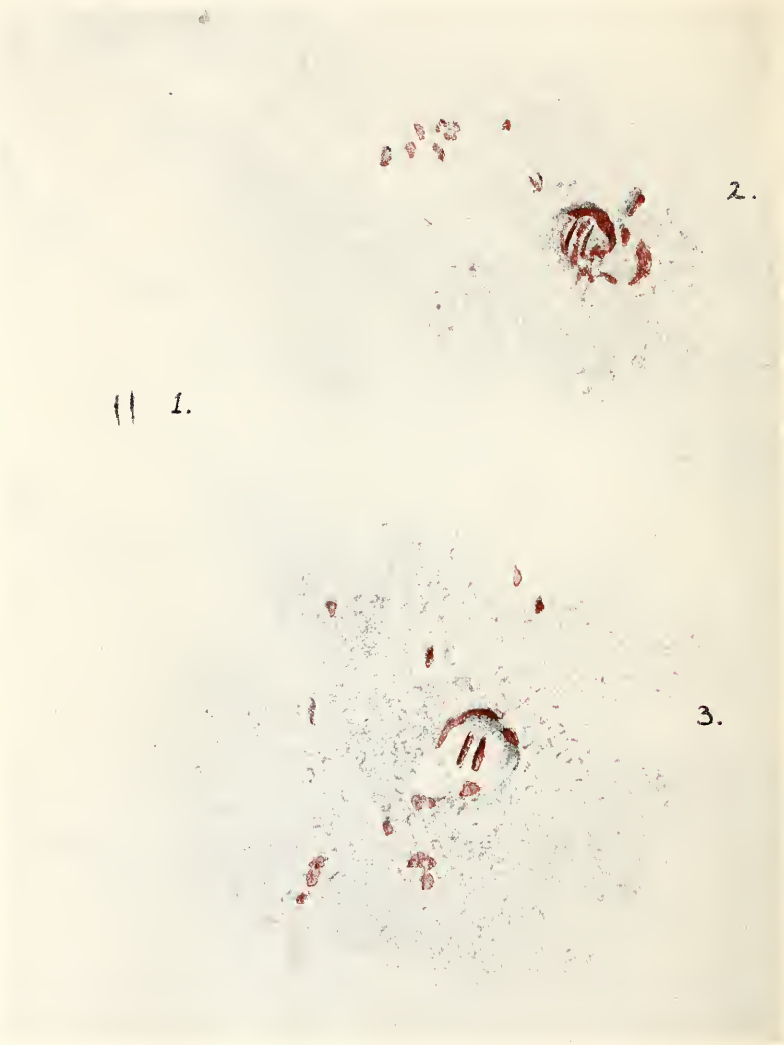
The number of positive, doubtful and negative reactions with each protein is shown.

Table 1—Cases giving no history of anaphylaxis tested for sensitization to vegetables.

	Number Tested	Number Positive	Questionable Number	Number Negative
Bean	24	0	0	24
Beet	24	0	0	24
Cabbage	24	0	0	24
Cucumber	24	0	0	24
Lettuce	24	0	0	24
Tomato	24	0	1	23
Onion	24	1	0	23
Parsnip	24	0	0	24
Peas	24	0	0	24
Potato	24	1	0	23
Squash	24	0	1	23
Spinach	24	0	1	23
Turnip	24	0	0	24

Table 2—Cases giving history of anaphylaxis tested for sensitization to vegetables.

	Number Tested	Number Positive	Questionable Number	Number Negative
Beet	4	0	0	4
Bean	30	1	1	28
Spinach	15	1	3	11
Cabbage	18	0	0	18
Tomato	12	0	0	12
Carrots	14	0	0	14



Types of reactions in skin sensitization test: 1. Control, no reaction. 2. Moderate reaction. 3. Severe reaction.

	Number Tested	Number Positive	Questionable Number	Number Negative
Cucumbers	16	0	0	16
Lettuce	16	1	0	15
Potato	34	7	2	25
Parsnip	23	1	0	22
Peas	30	3	0	27
Squash	26	2	2	22
Turnip	17	1	0	16
Onion	22	1	2	19

Table 3—Cases giving no history of anaphylaxis tested for sensitization to eggs and milk.

	Number Tested	Number Positive	Questionable Number	Number Negative
Egg white	25	1	0	24
Whole egg	25	0	0	25
Casein	25	0	0	25
Lactalbumin	25	0	0	25

Table 4—Cases giving history of anaphylaxis tested for sensitization to eggs and milk.

	Number Tested	Number Positive	Questionable Number	Number Negative
Eggs	74	6	6	62
Casein	76	4	0	72
Lactalbumin	51	0	1	50

Table 5—Cases giving no history of anaphylaxis tested for sensitization to fish.

	Number Tested	Number Positive	Questionable Number	Number Negative
Clam	25	0	0	25
Codfish	25	0	2	23
Haddock	25	0	1	24
Lobster	25	0	1	24
Salmon	25	4	1	20
Oyster	25	0	0	25

Table 6—Cases giving history of anaphylaxis tested for sensitization to fish.

	Number Tested	Number Positive	Questionable Number	Number Negative
Codfish	33	0	0	33
Haddock	30	0	3	27
Salmon	25	0	3	22
Lobster	32	0	1	31
Clam	30	0	0	30
Crab	23	0	0	23
Oyster	28	0	1	27

Table 7—Cases giving no history of anaphylaxis tested for sensitization to grains.

	Number Tested	Number Positive	Questionable Number	Number Negative
Buckwheat	25	0	2	23
Barley	25	0	0	25
Corn	25	1	0	24
Oats	25	0	0	25
Rice	25	0	0	25
Rye	25	1	0	24
Wheat	25	0	0	25

Table 8—Cases giving history of anaphylaxis tested for sensitization to grains.

	Number Tested	Number Positive	Questionable Number	Number Negative
Wheat	48	1	2	45
Oats	69	9	4	56
Rye	37	0	3	34
Barley	35	0	3	32
Rice	65	4	3	58
Corn	40	2	3	35
Buckwheat	26	0	1	25

Table 9—Cases giving no history of anaphylaxis tested for sensitization to meats.

	Number Tested	Number Positive	Questionable Number	Number Negative
Beef	25	0	0	25
Chicken	25	0	0	25
Lamb	25	0	0	25
Pork	25	0	0	25
Veal	25	0	2	23

Table 10—Cases giving history of anaphylaxis tested for sensitization to meats.

	Number Tested	Number Positive	Questionable Number	Number Negative
Beef	50	3	2	45
Lamb	48	2	0	46
Veal	33	0	0	33
Pork	36	0	0	36
Chicken	45	3	2	40

Table 11—Cases giving no history of anaphylaxis tested for sensitization to nuts.

	Number Tested	Number Positive	Questionable Number	Number Negative
Almond	11	0	0	11
Peanut	22	0	0	22
Brazilnut	17	0	0	17

Table 12—Cases giving history of anaphylaxis tested for sensitization to nuts.

	Number Tested	Number Positive	Questionable Number	Number Negative
Almond	17	0	0	17
Peanut	14	0	0	14
Brazilnut	17	1	1	15

Table 13—Cases giving no history of anaphylaxis tested for sensitization to fruits.

	Number Tested	Number Positive	Questionable Number	Number Negative
Bannana	25	0	0	25
Grapefruit	25	0	0	25
Strawberry	25	1	1	23
Orange	25	0	0	25

Table 14—Cases giving history of anaphylaxis tested for sensitization to fruits.

	Number Tested	Number Positive	Questionable Number	Number Negative
Bannana	16	0	1	15
Orange	10	0	0	10
Grapefruit	16	0	2	14
Strawberry	21	2	3	16

Table 15—Summary of positive reactions in the normal control cases.

	Positive Reactions	Questionable Reactions	Total Positive and Questionable
Onion	1	0	1
Squash	0	1	1
Spinach	0	1	1
Potato	1	0	1
Egg white	1	0	1
Salmon	4	1	5
Codfish	0	2	2
Haddock	0	1	1
Lobster	0	1	1
Corn	1	0	1
Rye	1	0	1
Buckwheat	0	2	2
Veal	0	2	2
Strawberry	1	0	1

The articles of diet which give a positive or questionable reaction in apparently normal cases are significant in that they include many of the common articles of diet which pediatricians usually avoid in regulating diets of children, because of experience that they cannot be tolerated. The presence of sensitization in the absence of symptoms may be due to a low degree of sensitization not sufficient to cause anaphylactic manifestations, but affecting the patient clinically.

Thus it is evident from these tables that the incidence of sensitization of apparently normal children is almost a negligible factor, except in the case of salmon, which reaction in any case cannot be considered as an absolute indication of sensitization. The articles of diet most commonly causing disturbance in children presenting anaphylactic symptoms are:

1. Oatmeal	4. Peas	7. Beef Juice
2. Potato	5. Rice	8. Chicken
3. Eggs	6. Casein	

This does not mean that a child with anaphylactic symptoms is not capable of taking any one or all of these articles of diet. Only a careful examination can reveal the causative factor. In many instances it is only one food, though it may be several.

It is only by the most careful study and examination of the case, with a definite knowledge of reading the specific reactions, that the form of sensitization can be determined.

DISCUSSION

Dr. Paul F. Whitaker, Kinston: I just wanted to report a case of food sensitization that came under my observation. This was a man who had asthma. I saw him first in February. He also had infected tonsils which were removed. Relief was secured by removing his tonsils and removing articles of diet to which the test showed him sensitive.

Dr. D. Heath Nisbet, Charlotte, Chairman: I was reading recently of cases of gastric ulcer, and it was suggested that in treating these cases it might be well to test them out and see if they were not sensitive to some food. That may be the way of getting at cases of ulcer. We see what different reactions can arise, and why should we not investigate in these ulcer cases and other cases to see if there is any sensitizati n to food?

Dr. Baker, closing the discussion: In regard to treatment, the best treatment is to eliminate the food factor. It is always necessary to remove infected tonsils, teeth, etc.

DISEASES OF THE COLON—DIAGNOSIS

H. L. Brockmann, M. D., High Point

This paper is an attempt to review the chief measures employed to diagnose diseases of the colon, including briefly the clinical pictures of a few of the important affections of this structure. Conditions of serious and often fatal nature involving the colon occur with sufficient frequency to warrant this attention.

Simple complaints of diarrhea, constipation, passage of blood, mucus, or pus, whether or not accompanied by pain, call for a rigid investigation. A carefully taken history is the starting point. The onset and continuance of constipation or diarrhea in an individual hitherto not so afflicted strongly indicates partial obstruction in the colon. In persons above 45 this is a common indication of cancer of the large bowel, frequently long before a mass can be palpated. It is not necessary that blood or other abnormal material occur in the feces, nor even that pain or much discomfort be complained of.

Passage of red blood or pus other than from local hemorrhoids, fistula, or other lesion about the anus, always means ulceration or abscess of the large bowel. If this ulceration is low enough to be seen by the proctoscope or sigmoidoscope its character can often be determined by direct examination. If it is too high to be accessible it is likely cancerous or tuberculous, because if other types of ulcers are present some of them are almost always present in the accessible portion.

Physical examination should always include rectal examination with a finger cot or glove. Information is thus gained as to the extent of hemorrhoids, the tonicity of the anal sphincter, the presence of rectal growths or ulcerations, and the extent of pressure from a large prostate or a posteriorly displaced uterus. The tonicity of the sphincter is frequently relaxed in obstruction of the sigmoid or pelvirectal colon. Inspection of the feces gives us directly facts which we can gain in no other way. If mucus alone is present, it is not likely that the lining of the intestine is ulcerated. Often gross examination will reveal the presence of blood or pus. Often necessary and always desirable is the use of the microscope, by means of which positive identification may correct an otherwise deceiving picture. The microscope may likewise reveal the causative agent of an ulceration, for example the Entameba histolytica. Simple chemical tests for blood are also available.

In the presence of blood or pus or much mucous, or where there is evidence of malignancy, the sigmoidoscope and X-ray are employed to more closely identify the lesion. By rœntgen ray study we learn much in particular of cancers, ulcerations—tuberculous as well as others—and diverticuli. Barium is given by mouth or by enema to carry out this investigation. The enema is the more valuable. It is necessary beforehand to empty the colon thoroughly with a purgative and a cleansing enema. Direct examination is obtained with the fluoroscope, and films are made for further study and permanent record.

The most important rœntgenologic sign of cancer is a filling defect of the barium in the colon—a local irregularity due to jutting of the growth into the intestinal lumen, by contracture and to some extent by spasm of the infiltrated wall. Next in importance is the finding of obstruction, since non-malignant stricture of the colon is exceedingly rare. Tuberculous ulcerations do cause filling defects and occasionally obstruction, therefore the above signs are not altogether characteristic of cancer. But considering that tuberculous ulcerations usually involve the cecum and ascending colon, cause characteristic spastic phenomena and rapid emptying of the cecum and ascending colon of barium, and are frequently accompanied by a history or the presence of tuberculosis elsewhere, a differentiation between cancer and tuberculosis of the bowel can usually be made. In chronic ulcerative colitis, non-tuberculous, and of obscure etiology, the most striking rœntgen characteristic is rapid filling of the colon by a barium enema, the contour of which is narrow, ribbon-like, and smooth. Diverticuli are characterized in radiographs by the constant presence of small round spots in the vicinity of the colon even after the enema is evacuated—oval or rounded shadows projecting from or lying outside the intestinal lumen, representing barium-filled diverticuli. They are usually accompanied by narrowing and defective filling of the bowel.

To summarize, I have found the important lines of investigation of colonic disease to be the following: history, physical examination, examination of the feces (and I might also add examination of the blood) sigmoidoscopic, fluoroscopic and radiographic study.

CANCER OF THE COLON

In consideration, more specifically, of certain diseases of the colon, I have selected cancer, amebic dysentery, and chronic ulcerative colitis as conditions offering diagnostic problems.

"Cancer of the bowel" usually means cancer of the colon, for cancer of the small intestine is rare. In the colon it occurs with equal frequency in men and women, most commonly between the ages of 40 and 65, although cases have been recorded in much younger and in older people. About half of intestinal cancers are located in the rectum and pelvirectal flexure and 20 per cent in the sigmoid. Other common sites are the cecum and splenic flexures. They may occur at any point.

There should be less terror regarding cancer of the colon. Extension and secondary deposits occur later and less frequently than with cancer in most other locations. Obstruction occurs more often before glands are involved, and the prospect of radical cure by operation in reasonably early diagnosis is comparatively good, even when resection of large portions of the bowel is necessary. When found at operation enlarged lymphatic glands near such cancers may be inflammatory only and not malignant. Rectal cases give results better than the worse gastric cases, but not as good as in cases where the growth is higher in the colon.

The symptomatology indicating the presence of cancer is as follows: (1) Onset of constipation or diarrhea with no other apparent cause in a person of the cancer age whose bowels have previously been regular. (2) The presence in the feces of mucus, from catarrhal colitis induced by obstruction; of pus, which may require the microscope for identification; or of blood, which may vary in amount from that only to be detected by chemical means to that sufficient to identify grossly as bright red blood. Or there may be no blood at all even in advanced cases. (3) Vague discomfort in the abdomen, which rarely amounts to real pain until the obstruction is almost complete. (4) Cachexia, which varies greatly. It may be absent or extreme. Progressive loss of weight and increasing anemia are the chief general symptoms. These are greatest when the lesion is proximal to the splenic flexure, whereas obstructive symptoms are greater when it is located in the more distal colon. (5) A palpable mass is present in only about 40 per cent of cases on rectal or abdominal examination. This is sometimes formed by the accumulation of feces back of the obstruction, therefore its disappearance and even partial relief of the obstruction after purgation does not mean that a cancer is absent. Only complete and lasting relief of all symptoms justifies exclusion of a diagnosis of cancer. Its suspected presence demands thorough and prolonged inquiry.

REPORT OF CASE

J. F. M., a retired white farmer, aged 56, entered the High Point Hospital November 13, 1923, complaining of diarrhea and of much discomfort across the lower part of the abdomen. He had suffered indigestion nearly all his life, and after being constipated years rather suddenly developed diarrhea about two years ago. The stools had been soft or liquid and of sausage color, with a considerable amount of fresh blood. His best weight had been about 150, and his weight on admission was 140, but he had become pale, and suffered from nervousness and insomnia. He had also suffered for a time from nervousness and tingling in the legs. He had been treated for pellagra and gastric indigestion. During the physical examination a mass was palpated in the right side of the abdomen, tender, and to which the patient was immediately inclined to attribute his trouble. He had first noticed it about two weeks before admission.

His father had died at 57 of pulmonary tuberculosis, and his mother of typhoid. He had used alcohol in very small amounts for years and chewing tobacco excessively until a year ago.

Physical examination: The patient was a slender man, aged apparently about 50, with slight duskiness of skin. The abdomen was soft and slightly full. There was a mass apparently half as large as a man's fist, near the hepatic flexure of the colon, freely movable and tender.

Radiographs after barium enema and again after barium meal both showed marked filling defect in the ascending colon, near the hepatic flexure.

A blood Wassermann test was negative; red blood cells 3,280,000; hemoglobin 48%; leukocytes 7,120; neutrophiles 65%; lymphocytes 19%; large mononuclears 15%; basophiles 1%. The gastric contents were normal. The urine contained a trace of albumin and a few casts.

Pre-operative diagnosis: Cancer, ascending colon, near hepatic flexure.

Operation: Approximately 5 inches of the ascending colon, including a hard nodular mass, was resected, and an end to end anastamosis made. No evidence of metastasis was found.

On the inner surface of the piece of gut removed was a carcinomatous ulcer surrounding the lumen for a distance of about 2 inches, causing almost complete obstruction. Microscopic findings: adeno-carcinoma.

Post-operative history: Uneventful recovery. Discharged December 17, 1923, a month and four days after admission. On March 15, 1924, he felt entirely well, the only finding relative to his illness being slight numbness in his legs. His weight was greater than ever in his life and his red blood cells numbered slightly more than five million, with a hemoglobin reading of 80%.

AMEBIC DYSENTERY

A disease, the incidence of which in this section of the country has not been determined with any degree of accuracy, is amebic dysentery. The Entameba histolytica frequently invades the colon of man in most tropical and subtropical countries, and dysentery from this cause certainly exists in this region.

The condition usually begins insidiously with lassitude, weakness, slight abdominal pain and diarrhea. As a rule blood and mucus later appear in the stools, in which, when fresh and warm, the amebæ can be demonstrated microscopically. There is great pain, tenesmus, griping, and purging, 15 or 20 stools a day not being uncommon. The amebæ are sometimes carried elsewhere by the portal circulation, and abscess of the liver is a fairly frequent complication.

Amebic dysentery has a tendency to improve and become chronic, with relapses, but it may have an acute onset and run an acute course to an early termination fatally. This varying severity explains certain variations in symptoms.

The temperature is seldom high, even in acute cases. When death occurs it is usually from exhaustion. Perforation of the intestine and intestinal hemorrhage are occasional causes.

Accurate clinical diagnosis is based chiefly on finding the Entameba histolytica in the stools. Most cases recover under modern treatment. This consists chiefly in the administration of emetine, preferably by mouth, as emetine bismuth iodide (grains three) in a hard gelatine capsule every night for 12 nights, or emetine hydrochloride is given by hypodermic 1 grain each night for 12 nights. Relapse calls for repetition of the emetine, with an increased number of doses, up to 18 or 24.

REPORT OF CASE

W. L. B., an unmarried white farmer aged 45, was admitted to the High Point Hospital January 17, 1924, complaining of abdominal pain. He stated that for 17 days his bowels had been loose, but that previous to this there had been no trouble other than occasional constipation. At the first, one night his sleep was disturbed by a soft stool, followed by 8 or 10 watery stools the next day. In a few days free blood appeared, ceased for about a week, then re-

appeared, about a tablespoonful at a time, with considerable mucus. Onset of pain was gradual, of a griping character, worse on the left side of the abdomen. He had kept himself on a milk diet from the onset.

Twenty years ago he had lived for a time in South Carolina, where he contracted tertian malaria.

Physical examination: The patient was a pale, fairly well nourished man, with the appearance of weakness and with a weak voice. The teeth and gums presented a condition of moderate pyorrhea. The abdomen was soft and moderately tender generally. There was a distinct mass in the cecal region, the size of a man's fist, which felt like thickened cecum.

The urine contained a trace of albumin. The stools were watery and contained much fresh blood with particles of clear mucus. At times they were of a dark color, greenish, and contained solid particles of feces. A microscopic examination was not made. Rœntgen ray study with barium enema and barium meal gave no definite findings. The column of barium moved very slowly in the ascending colon.

Course: On giving the purgative and enema in preparation for rœntgen study, the mass referred to entirely disappeared. The temperature varied from 97 to 100.4 degrees, and the pulse from 100 to 130. There was a constant desire to move the bowels. Progressive weakness and rapid emaciation ensued for a term of 6 days, with great pain, terminating with hiccough, delirium and rather sudden death while straining to move his bowels on the night of January 25, 1924.

At autopsy the cecum and ascending colon were found greatly distended with fecal accumulations of semisolid character. The sigmoid in the left iliac fossa had ruptured for a distance of 3 inches or more and the pelvis was filled with foul bloody fecal matter. The whole descending and sigmoid colon was covered on the inner surface with ulcerations, almost circular, and deeply undermined, some going through to the serous coat. This was easily torn on removing the colon, causing new perforations. The ulcers were typical of those caused by the Entamœba hystolytica.

CHRONIC ULCERATIVE COLITIS

Chronic ulcerative colitis of unknown etiology presents a characteristic pathology and clinical picture. It is infective in origin, but apparently is not transmitted readily to other individuals. From its close similarity to bacillary dysentery, it seems probable that the unknown organism is closely related to the Bacillus dysenteriæ.

Sometimes the onset is acute, with severe diarrhea and fever, but more commonly it is insidious, the first indication being perhaps a slight intestinal irregularity with the occasional passage of a little mucus or blood, many months before the onset of severe symptoms. Later there is always diarrhea, the number of stools reaching 10 or 15 a day. They are generally fluid and small in bulk, with bright red blood, pus and mucus. Occasionally there are quiescent periods in which the microscope may be required to recognize these substances. The mucous is unformed, and not like that of mucous colitis.

There is generally abdominal discomfort but seldom pain or tenesmus, and very little tenderness excepting in a few cases in which the peritoneum becomes inflamed. There may or may not be distension or slight muscular rigidity.

Digital and sigmoidoscopic examination should always be made. The mucous membrane is bright red, thick and sometimes granular, bleeding easily when touched.

The ulceration may become so extensive that only small islets of mucous membrane are left. The edges are very irregular, and the thick mucous membrane is not undermined. In spite of the severity of the ulceration, it is superficial and stricture never develops. It is sharply limited to the large bowel, as the ileocecal valve prevents the spread of the infection to the ileum.

Generally, there is not a great deal of discomfort. Irregular fever is present during acute exacerbations. The appetite is usually good. Progressive emaciation, weakness and anemia follow the constant diarrhea, and death usually results from cachexia. Efficient and prolonged treatment is necessary to save the lives of these individuals, who seldom realize the serious character of their disability.

REPORT OF CASE

Mrs. P. H. G., white, aged 50, a rural resident of Virginia, was admitted to the High Point Hospital January 29, 1924, complaining of bloody diarrhea for six months, following a long existing constipation. There had also been symptoms of indigestion such as belching and "sour stomach," and she had been treated for gall bladder infection, carrying out trans-duodenal lavage at home, and taking autogenous vaccines. She had become much weakened, easily exhausted, and nervous, especially when in crowds. There was a complaint also of itching and dryness of the skin.

Her mother had died of tuberculosis at 44, and her father at 60 from gall bladder disease. She had had no children or miscarriages. After the usual childhood diseases, there was difficulty in establishing her menstruation, after which her health was normal. Her teeth were replaced by plates. She had had an operation supposedly for hemorrhoids and fistula in ano several years before, and for removal of the tonsils a month before admission. Following the former there was slight loss of control over the bowel movements. There had been no menstruation for four years.

On physical examination she was found to be in a fair state of nutrition, the only significant findings being general slight abdominal tenderness, and considerable distension, with no rigidity.

Radiographs after a barium enema showed a ribbon-like barium column in the transverse and descending colon. Proctoscopy and sigmoidoscopy showed an ulcerated and bleeding mucous membrane. Following the barium enema, between one and two pints of thick cream colored pus passed from the bowel. Repeated examinations of the stools revealed pus, fresh blood and dark liquid feces—no evidence of animal parasites. Cultures were not made. Blood examination revealed a surprisingly slight degree of anemia, and a negative Wassermann test. There was slight albuminuria.

Course: A diagnosis of chronic ulcers of the colon was made and for two weeks and a half the patient improved moderately, chiefly under rest and diet. On February 16, an exploratory laparotomy was performed with the hope of locating and removing the cause. The uterus was found to be moderately enlarged, with multiple fibroids, and densely adherent to the sigmoid colon, as was also the left broad ligament. There were also adhesions between the colon and anterior parietal peritoneum, as well as about the splenic flexure and

cecum. The cecum was hard and thickened, and the appendix chronically inflamed. The appendix and uterus were removed and the adhesions cut and tied. Convalescence from the operation was fairly satisfactory, but the original symptoms persisted in spite of careful medical and dietary supervision. There appeared much abdominal tenderness and very free bloody stools showing pus also. The temperature, which before the operation had never been above 100, rose to 102 eight days after this, and many small aphthous ulcers appeared in the mouth at the same time. The latter healed, but the patient gradually lost strength and died, apparently from exhaustion, on March 10, 1924.

Postmortem examination of the abdomen revealed plastic and slightly fibrinous adhesions in 4 or 5 places between various loops of the small intestines, the parietal peritoneum and the colon. The colon was rather friable, and on being removed was torn fairly easily.

The whole mucosal surface from cecum to rectum was covered with an irregular confluent ulceration extending to the muscular coat, with only small islands of mucosa remaining. The edges of these islands were thickened, and even in these there was more or less necrosis. The lesions were sharply limited to the colon, the terminal ileum being entirely healthy.

Pathological diagnosis: Chronic ulcerative colitis.

DISCUSSION

Dr. J. T. Burrus, High Point: I am glad to have an opportunity in this connection to bear testimony to the splendid work that Dr. Brockmann is doing in diagnosis. This also gives me an opportunity to say, in this connection, that diseases of the colon, as met with and observed by most of us, probably go untreated, and certainly in the past have been greatly neglected. I do not believe that a surgeon *per se* can handle colonic diseases very satisfactorily without the work and the assistance and support of a competent internist. Looking to the past, I can recall many cases that I believe could have been saved had those cases fallen in the hands of competent internists. The case to which Dr. Brockmann refers you was a most pathetic one. He had been in the hands of two or three gastro-enterologists. For no consideration would I cause you to regard or to think or to reflect in any disparaging way upon the gastro-enterologists, but I simply mention this just to emphasize that possibly they, too, are not just as careful as they might be in locating pathological lesions. These cases had also gone through the hands of a diagnostician and a surgeon. Dr. Brockmann pursued his usual method of care and patience and made a very concise and a very correct diagnosis. It has been my observation that to remove cancer of the colon you do not so frequently have a recurrence as you do with cancer in many other parts of the body. With the history of frequent bloody stools preceding (probably) an attack, that case should have had a thorough colonic study. To thoroughly study the colon requires preparation of the patient and time on the part of the examiner, with a sufficient equipment to come to a rational conclusion. I can not conceive of how the medical profession, and especially the men that are interested in the surgical phase of it—and here I would like to say that I am glad we are approaching that day in which we are

getting away from cutters and carvers, for ofttimes that is the lesser side of surgery—can overlook the necessity for studying these cases by rectal examination, proctoscopic and sigmoidal examination. With the proctoscope study the case, and by X-ray, giving the barium meal. The barium enema will reflect much light on many cases. Again, I think much can be disclosed if we will carefully do a palpation, provided the patient is prepared for the palpation, if you can teach the patient to relax the abdominal wall. To do this takes time, and to do it you must obtain the confidence of your patient. Following palpation, if carefully done, we shall disclose information that will be of great importance.

I rose more particularly to bear testimony to and to congratulate Dr. Brockmann upon the splendid work that he is doing, especially along this line of colonic disease.

Dr. C. C. Phillips, Charlotte: In diagnosis of diseased conditions of the colon, which Dr. Brockmann has so ably presented to us, of course as he mentions, X-ray examination comes into play, more particularly in malignant lesions of the colon. We should employ the barium meal passing normally through the intestines, and if we can not be positive that there is or is not a filling defect an enema should be employed. The technic for giving the enema, I think, is rather important. The barium should be mixed with something that will hold it in suspension. We use in our work barium sulphate mixed with water and acacia. We should be very careful as to the temperature of the mixture as, if it is too hot or too cold, it may set up spastic conditions in the colon which would lead us to think that we have definite filling defects. I also think it is very important that the enema be observed as it passes into the colon, as very often by doing this we shall see areas of the colon fill, showing normal contour, in which, after the enema has passed around and filled the cecum, we shall have spasm set up in some region of the colon and it will be impossible by palpation to cause this part of the colon to fill. In these cases we very often have conditions resembling chronic ulcerative colitis, and also have a condition resembling a filling defect caused by some organic lesion, that commonly found in the colon being carcinoma. I think there is nothing further which I can say just now, except that in the ulcerative lesions which Dr. Brockmann mentioned we may be able to say positively that we have ulcerative colitis, though of course it is impossible to determine from the X-ray examination alone what is the cause of this.

Dr. D. Heath Nisbet, Charlotte, Chairman: We all know that in carcinoma involving the lower bowel by far the greatest percentage of cases occur at the junction of the rectum and sigmoid. In an investigation conducted at the Cook County Hospital several years ago the writer made a study of 1,500 cases. Of these 1,500 cases over sixty per cent were at the junction of rectum and sigmoid, and, as he put it, within the reach of the examining finger. In all these cases of colonic disease, whether or not we suspect malignancy, we should certainly make that examination, because most of these cases are discovered later, when inoperable, and anybody can

find them then. I find in treating spastic conditions of the rectum and colon we can use plain Epsom salt solution, just as Lyon said. Epsom salt solution applied directly to the duodenal wall will cause relaxation. We generally take a teaspoonful of Epsom salt and dissolve it in a quart of warm water and use it as a bowel wash, getting very excellent results from that.

ATTENTION, MEDICAL MEN!

H. D. Stewart, M. D., Monroe

There are a number of things in general and several things in particular to which I wish to invite your attention. If you are interested, you will listen. If you are not concerned, you will not hear.

You know I have an idea that this meeting of the State Medical Society is going to be the liveliest in a long while. So, having been placed at an early hour in the program, I wish to start the ball to rolling with a few anticipatory remarks and arguments. As I am not running for any office, nor playing politics in any way whatever, I may feel constrained to express myself rather freely and frankly.

First: What are different laterals or branches or units of the State Medical Society doing to make the profession more scientific, more efficient and more dignified?

The County Society. Our County Society of Union, through its live president, is entering upon a new era. Scientific men of great experience and expert knowledge in the profession are being asked (one each month) to lecture or to instruct or to inform our members. In March we had Dr. O. L. Miller, an orthopedic surgeon of Charlotte, with a fine didactic and illustrated lecture on "Spastic Cerebral Paralysis" and on "Burns and Traumatic Deformities." In April we had Drs. Norris and Murphy of Rutherfordton in a very interesting and instructive lecture on "Radiotherapy." In May we are expecting Dr. P. P. McCain, of Sanatorium, on "The Early Diagnosis of Tuberculosis" or "The Diagnosis of Obscure Cases of Tuberculosis." And so on and on every month we are expecting to have the very best talent brought home to us. These scientists draw a larger crowd usually than the councilors, because they are distributing knowledge, and the other function seems to have some politics in it leading up to medical examiner or some other office in the State Medical Society.

What is the State Board of Health Doing? It is doing some valuable work on account of its efficient secretary and his able assistants. It could do much better if politics, patronage and denominational influence could be entirely eliminated. Where politics and political influences enter, efficiency makes its exit.

The members of the State Board of Health should all be elected by the members of the State Medical Society without packed houses, lobbying, caucusing, or anything else political. A man who cannot have a large enough confidence vote of his confreres to elect him to such important offices should not have the brass, the boldness

and the effrontery to serve. The same thing applies to the work of the nominating committee. It is not representative, neither are its nominees representatives, unless they are selected and confirmed by the majority.

Our State Medical Society would be much larger and stronger if it were strictly democratic in its ideals and its operation. All it takes to endorse a man in political convention or caucus is one political crook to make a motion; another political crook to second it, and a few more political crooks or patronage-seekers to push the steam-roller. Then there must be certain press agent hirelings to put headlines in the dailies stating that the North Carolina Medical Society or some other large body has endorsed John Doe, Bill Polk or some one else, and many good, honest, right-thinking men become so disgusted that they don't care a cuss whether they attend the meetings or not. The man who sets himself up as a medical leader on a political basis, grabbing and holding every office he can, is an enemy to the best interests of the Medical Society or to the state or to the church. He doesn't think so, of course. He thinks everything depends on him. He is unconscious of the evil effects of his political life. It will not do him any good at the hour of death to state in big headlines how many empty honors he had on earth. You seldom see a really big man who is a fool about a little office.

Our Marriage Law. Our marriage laws need strengthening. They are somewhat farcical as they now function. Not one doctor out of a hundred determines or discovers the presence of venereal disease. Nor can he nor does he determine the presence of tuberculosis. An applicant for a marriage certificate may have a dormant tuberculosis today and an active tuberculosis tomorrow. And the borderline between mental deficiency and mental efficiency is only a shadow. It merges and fluctuates so that it is almost invisible. All our sister states should be asked to join us in a marriage law that will prevent the breeding of criminals, degenerates, invalids, idiots, profiteers, liars, politicians, loafers, vagrants, thieves and others of low character. The number of non-producers and social parasites and dependents is increasing so out of proportion to the number of producers of spiritual and material wealth that the economic foundation of the entire world is being shaken and threatened.

Tuberculosis is the Universal, Omnipresent Disease: The appropriations to the state public health work are now very liberal. How is the money being spent? It is estimated that eighty-five per cent to ninety-eight per cent of the human race are infected with tuberculosis some time in life. About two hundred thousand dollars is invested in a state sanatorium for negro tuberculars. There are thirty patients with a capacity for seventy. In the meantime there are thousands upon thousands of negroes in the state who will not be reached. The death rate is much greater over the state

than statistics and death certificates might indicate. Many cases of tuberculosis are reported in death certificates as pneumonia. Some are called one thing, and some another.

The State Board of Medical Examiners increases the death rate every time it turns loose a doctor who can not diagnose tuberculosis and cancer in their incipiency; who can not protect the expectant mother against puerperal convulsions or against placenta previa; who will give pituitrin ignorantly and indiscriminately, causing uterine rupture and fatal hemorrhage, lacerated cervix and perineum. Men of the board, you are greatly responsible for these things. The state needs to invest less money in buildings, and more in brains.

The sanatorium idea will never stamp out tuberculosis. There is too much of it. While the care is being made so expensive in sanatoria for just a few, thousands are dying preventable deaths.

May I suggest ways by which tuberculosis may be stamped out? Three things in particular may be done to stamp out this scourge:

First: The State Board of Health should send active, intelligent medical men into every county in North Carolina to get an accurate list of all families who have lost a member by tuberculosis within the past twenty years; of all who have had an active case of tuberculosis in twenty years. These families should be supplied with all literature that will help in stamping out the disease.

Second: Physical culture. The teaching and the practice of physical culture should be compulsory in every school in North Carolina. This alone would finally almost put a stop to tuberculosis. I am talking about intelligent, well-directed physical culture, not athletics. There is a vast difference between physical culture and athletics. The one is sane and systematic. The other is carried to extremes and tends to enlarge the heart of the athlete. I would suggest, too, that a certain percentage of mental culture and moral culture be mixed in with the physical. A magnificent physique with nothing else; a dyspeptic bookworm who cannot endure hardship, or a moral monomaniac restricted and confined to narrow limits—these things are not products of the best educational efforts.

Third: Public health, sanitation, and the cause and prevention of tuberculosis and other diseases should be taught in all the schools.

If, by having these things done, the State Board of Health can make the people of North Carolina healthy and happy, I for one shall be ready to bid them God-speed, and when their work on earth is done, I suggest that they be given a final resting place in Heaven.

Medical Economics. There are two extremes in medical economics, neither of which should be sought. The man who enters the medical profession with no higher aim than to make money should be kept out. On the other hand the doctor who is a careless business man, who never makes out accounts and does not charge and try to collect a decent fee for his services, is out of place in the medical profession. He cannot render nor give good, intelligent service without charging a decent wage. If he gets

pay for his services, he can better inform and equip himself. He cannot do good work on a bread-and-water renumeration. The main reason so many people do not pay the doctor is that there is always some ignoramus or unprepared or unequipped doctor ready to go for nothing.

Medical Ethics. Many years ago the American Medical Association through a committee formulated and adopted a code of ethics—for the other fellow to follow. It seems to have been made to be violated. No code of ethics or of anything else is any stronger than the character of the men who represent it. In our county we do not have any code. A doctor will slip in to see another doctor's patient and purposely differ with him in diagnosis or treatment. Doctors will steal other doctors' cases. One doctor will run down another doctor's character and circulate malicious lies about him. Doctors' wives will run around slandering other doctors and trying to shake their reputation. I have no use for such stuff. It looks too much like little negroes fussing over a crap-game. It is ignorant, undignified, and a disgrace to the profession. Oh, the petty jealousies! I can stand an ignoramus in the medical profession, whose intentions are honest, although I should much prefer to compete with a high-grade medical man. The honest ignoramus, if he has any excuse at all for being in the medical field, can acquire sufficient medical knowledge to make him fit for association. But the born damned rascal cannot acquire a character.

Do we need a medical college in North Carolina? What for? It would lower standards and crowd the profession, and crowding is said to breed contempt. The ambitions of doctors who wish to be "professors" or of those who wish to enlarge the field of their specialties by sending out feelers and feeders are not to be considered at all in this matter.

A very nice sounding argument is that there is a scarcity of doctors. There are more than one hundred and fifty thousand doctors in the United States and about three thousand in North Carolina, or more than one to each thousand of the population in North Carolina. There is no scarcity of doctors. This is a strange argument for doctors to be using anyway. Why do you wish to increase competition? Nearly all the cities are over-crowded with doctors. They flock to the cities just as the non-producing foreigners do who are flooding our large seaport cities. There is no scarcity of labor. There is a scarcity of skilled labor and there is a scarcity of laborers who are willing to work. The same is true of the doctors. Too many are seeking easy jobs. Nearly all the doctors of Mecklenburg county live in Charlotte, and the others would like to. There are enough doctors in Charlotte to supply Mecklenburg, Union and one other county. There is no reason why a surgeon or other specialist should not locate in a rural community and draw trade from afar. He can do it. Why should not our boys go far away from home to study medicine and surgery amongst

new people and in the midst of a cosmopolitan world? There is always a way for the ambitious poor boy, if he has determination and tenacity of purpose.

The state health department can reduce the need of doctors in North Carolina fifty per cent, if they get the encouragement they should have. And woe be unto those who would oppose those who are trying to make North Carolina healthy and happy.

Our Medical Literature. Our medical books are being sold at more than twice their normal price. The publishers place the responsibility on the lithographer's union, typesetters' union and the printers' union, together with the pulp-mill trust. Most of the new editions are a repetition or reduplication of old literature, with a few new chapters added. Why not get all new discoveries and new knowledge together in new books and leave out the old material?

The manufacturers of drugs and pharmaceuticals are employing some of the best brains in medicine and surgery to give us some very useful and valuable literature in concise form. It is well to read this literature. We are not obliged to use their manufactured products unless they give results. Our medical literature needs reduction and classification. It is drifting too far toward extreme commercialism and too far away from scientific knowledge and education. Almost every week some company wishes to send us a new book for ten-day examination. The best way to stop this practice is to read the books rapidly and then return them. Every college professor has an ambition to write a book, and some who are not professors.

What controls the doctor's actions? Whatever he thinks about most. In the olden times we had the turpentine, laudanum and mercury doctor. Every doctor has his hobby. What is yours? Every doctor has his fad. What is your fad? Every doctor has his besetting sin. What is yours? If you don't get calomel out of your head, it will follow your pen when you write a prescription. What do you prescribe most often? Whatever preparations are uppermost in your mind. Some doctors take to every new fad that comes their way. For a while many patients lost good sound teeth when they complained of pain or other symptoms the cause of which could not be accounted for. When a doctor gets the notion that he is an expert at doing something, he is inclined to refer every trouble to that one thing. Some will drain the gall-bladder, others will take out the tonsils; others will wash out the stomach; others will make x-ray pictures; others will give cacodylate of sodium or 606; others who think they are surgeons, or would like to be, or have a great desire to be surgeons, will operate on everything that comes along. Many a poor helpless fellow with typhoid or gallstones or constipation or kidney colic or gas in the gut has lost his appendix and with it a hundred dollars and a hospital bill, and maybe his life.

Men, why don't you learn more about fundamental differential diagnosis and quit heaping all these indignities upon a long-suffering people?

What are we going to do with our opium habitues? The National Government should take them in hand and shut them up and provide for their treatment. The doctors should all sign up and the druggists sign up not to let them have opium in any form. They are all unsound and should be so treated. Any opium bootlegger or blockader should be sent up for five years for the first offense; for life for the second offense, and hanged for the third offense. There are new problems for the State Board of Health. To save human life they must tackle blockaders and bootleggers, pistol toters and speeders. I am with them whatever they do.

In conclusion—I once told my wife that if I ever heard of her going about slandering the character or running down the reputation of another doctor with the idea of adding to my practice, I would leave her, even without alimony. We grow by improving our own opportunities and by rendering more efficient service to humanity and not by trying to defame or injure those who are following the same trade or profession that we follow.

We must speak good and not evil of the other fellow, even though we may have to depart from the truth.

Radium: There is a tendency all over the country to install a supply of radium in the small hospital, more for money-making than for scientific purposes. Brethren, let me enjoin you to be very careful how you tamper with this dangerous, mysterious remedy. An overdose will destroy healthy cells and tissue beyond regeneration or recall. An underdose will stimulate the growth of diseased cells. This valuable adjunct to surgical treatment requires months and years of study and observation. The most expert operator is often puzzled. The pathology of the disease and the pathology of radium reaction are sometimes extremely hard to differentiate.

Another thing: When the doctors get hold of a chronic and can't differeniate the diagnosis, why they just take pictures and take pictures and can't read them, and take more, and can't read them. They can read ten dollar bills, but it takes a good pathologist to read the human body.

DISCUSSION

Dr. C. M. Strong, Charlotte: I wish the doctor, in pursuing his investigations, would have given us some plan for getting out of Charlotte some of those doctors that he told us about.

Dr. J. T. J. Battle, Greensboro: I was very much impressed by some of the points Dr. Stewart made in his paper. I do not suppose there is a single one of us in this room who will have a voice in the election of officers unless he happens to be a delegate, and we all like to vote for the officers. I have been a member of this Society for a long, long time—I am not going to say how long, but I am an honorary fellow now—and I know there are members of this Society who have not been out of office since I have been a member. There are officers in

this Society who, when they shall have finished their present terms of office, will have been in office a generation. That is a reflection upon the Society, there is no question about that. If this matter were brought before the house it would not be so. These offices would be distributed, and their confreres would be interested in voting for officers. Some of them are not elected for any particular fitness, but on account of their popularity. I have voted for some of my friends and violated the very arguments I am making now. I was asked to vote for them and I liked them so much that I did vote for them, although I knew I should not do it. If I had the courage Dr. Stewart spoke about I would have said, "Well, you have been in the office ten or fifteen years and I think you should let some one else have it." I think we ought to take up this very matter with the House of Delegates and secure the election of officers by the house. It would bring satisfaction, if nothing else.

Dr. S. A. Stevens, Monroe: Dr. Stewart made the statement that he thinks the examination required by the state for license to get married is a farce. Well, of course, we all know that in regard to certain diseases it is practically impossible to know whether the candidates have those diseases or whether they have not. As a rule, though, when a man applies to a doctor for a certificate in order to secure a marriage license, if you will state to him clearly and in a kindly way the evil that may result from his concealing the fact of having had certain diseases, and try to get him to understand just what may result, I am sure that in a great many cases the man will come across and confess. At any rate, I do not see that the law can do any harm, and it certainly may do good. Of course, a dishonest or an inefficient doctor can and I suppose some of them do give people a certificate to get married when they should not have it, and it is a right serious matter to interfere with a thing like that, but I see no reason for doing away with the law. I am sure it does do some good. Of course, from the very nature of the trouble that some of them have, there is no way in the world that I know of to get at it absolutely. Perhaps the candidate may be unfit for marriage from the standpoint contemplated by this present law, but at the same time we can do something along this line. Of course, if there is a doctor who will do and say anything for the sake of the small fee that may be charged we can not do anything more. I know a couple came to me and just a few questions elicited the fact that both candidates were unfit for marriage on mental grounds. The mother came with them and lied about the age of her daughter. Just a few questions brought out the facts.

Dr. Stewart, closing the discussion: I want to say that I have no respect whatever for a member of this Society who is trying to hold two or three offices at one time, and I have no respect for a man who runs for one office after another. A man who attends all these conventions trying to get offices can not do any good, honest practice at home; he has no time.

About these dopers—not long ago a fellow came to Monroe on a belated train, about two o'clock at night, and called me up. I thought his voice sounded familiar; thought he was an old friend, but it turned out that I didn't know the scoundrel at all. He said he wanted to see me as he passed through, and pulled me down there to the station at two o'clock at night to give him a shot.

Not long ago a lady came to me and told me she had kidney colic. I asked her how long. She said nine months. I said, "Well, every case I ever saw either died or got well in three or four weeks." She wanted morphine; said morphine was the only thing that would do her any good, and she traveled fifty-three miles that same night trying to get it.

These dopers are insane, they are actually insane. They are worse than some of these folks that are insane with ignorance. I had one case of that kind when I was examining soldiers for classification. All of them wanted to come home, of course. They sent in one from what they called the "nut" hospital, Base 116. He was from the north Georgia mountains. I quizzed that fellow, quizzed him and could not find anything, and I turned in a diagnosis of absolute ignorance. I took it in to the major and asked, "Well, what do you think of that?" He looked over the history and said, "Well that is all you can do; just give a diagnosis of mental deficiency."

I would like to see an open meeting on Wednesday of our annual session for electing officers. At present we have officers that are like kings and queens—creatures of royal lineage, but representing the body of medical men who come together each year and make it possible for them to usurp these offices.

EMPYEMA OF THE PERICARDIUM

M. R. Adams, M. D., Statesville

On February 18, 1924, I was called to see Alfred J., age 24, normal robust man. He was suffering with pain in the left side, high temperature, and in fact had all the usual symptoms and the history and physical findings of a well established pleuro-pneumonia, left side.

The disease ran the usual typical course, terminating by crisis on the ninth day, the temperature dropping to normal, pulse becoming slow and regular, and the rapid breathing was substituted by normal respiration. While all the symptoms of a decided crisis were present, yet he failed to enter on a convalescence, the temperature lingering around 101 in the afternoon, and the dullness which had been present so long failed to be replaced by the resonance which was so anxiously expected. The dullness lingered on and on; temperature each afternoon; the breathing began to be embarrassed again. No chills, no sweating, yet the man had every appearance of a well marked sepsis. The dullness on percussion being more marked, the suspicion of empyema was so strong that the pleural cavity was aspirated, but there was no pus or serum

present. This man was carefully watched and supported for one week, when the general dullness over the lowest lobe of the left lung began to clear up. At that time the dullness was more marked over the precordial area and there was, too, a marked bulging in this same space. The cardiac impulse was felt and heard to the right of the mid-line. It was now decided definitely that this was a case of empyema of the pericardium and that a surgical operation was imperative. He was at once moved to Dr. H. F. Long's Sanatorium, in Statesville, where the following operation was performed under local anesthesia.

A long incision was made beginning at the mid-sternal line and extending around and following the course of the fourth rib, the flaps were well reflected and the cartilage cut loose at the sternum. The cartilage was followed to the junction of the rib and back several inches, where the rib was cut as the cartilage had been, then the intercostal muscles were carefully incised allowing the pericardium to bulge into the incision. The pericardium was stitched to the sub-intercostal fascia and then opened, when a quantity (estimated to be a quart) of purulent fluid was evacuated. As soon as the fluid escaped the heart dropped back to its normal position. No drain was introduced into the pericardial cavity, but the incision through the muscle was held apart by iodoform gauze loosely packed. There was a great deal of subsequent drainage for ten or more days. The man was relieved of his condition of extremis at once and has made an uneventful and complete recovery.

These cases are rare and difficult of diagnosis. One recognized authority and writer of a text book on the practice of medicine, Stevens says: "The diagnosis of empyema is most frequently made at the postmortem examination."

During my entire professional career it is the first case that has come under my observation, and I know that it is the first that I have recognized.

This condition is always a sequel of some other septic focus or process in the body. It is said to follow pneumonia more frequently than any other disease.

SECTION ON PUBLIC HEALTH AND EDUCATION

ROBERT S. MCGEACHY, M. D., CHAIRMAN
KINSTON

CHAIRMAN'S ADDRESS

ROBERT S. MCGEACHY, M. D.
HEALTH OFFICER LENOIR COUNTY, KINSTON

In my opinion it is quite an honor to be called on to serve in the North Carolina Medical Society even in ever so humble a capacity as a member, therefore, I am conceited enough to look upon it as a signal honor to be called on to preside over such a section as the one on Public Health and Education. I desire to thank my old friend, our President, J. Vance McGougan, for this honor and to assure him that I have put forth an honest effort to so fulfill the trust imposed upon me as to reflect credit upon him and the entire society.

I wish also to express my sincere thanks to those who by their acceptance of my invitation to read papers have made it possible for me to put before this society the best program that has ever been presented.

Had I been forced to record a title for the few remarks I will make I might have recorded something like this: "Nature Versus Science" or "Back to Nature."

Years ago when the public health officials and the "baby specialists" began to have so much to say about the artificial feeding of infants I said to myself, "The dunces have gone and hitched that old horse up to the wrong end of the go-cart," and I longed for the time to come when I could give them a "piece of my mind," but now that the opportunity presents itself I tremble at the enormity of my self-imposed task.

You know that there are two classes of people that are fit subjects for admission to the State School for the Dumb (dentists and barbers), but a dentist did venture the assertion, while exploring the caves in my mouth, that "a bridge is no stronger than its abutments" and I have always contended that it is the rare exception and certainly not the rule that a child grows to be stronger, physically, mentally, or morally, than those who gave it life.

I must confess that I do not know much, if any, more about the intents and purposes of the Sheppard-Towner Maternity Bill than did the authors that "invented and patented" it, but I do say in all sincerity and solemnity that in the years to come the nations of the earth would be stronger and more powerful, life would be sweeter and more worth the living, individuals stronger and much more worth-while citizens, if all agencies looking to the betterment of mankind, whether physically, morally or mentally, were to concentrate all their efforts towards the attainment of one end, and let that end be what might be called "worth-while parenthood." Teach the boys and young men that it is their duty to so

live and to so rigidly obey the laws of nature that, when the days of maturity arrive and the time of mating comes, they can openly and honestly seek the companionship of a mate that would have a just right to say with pride what a lady once said when asked why she married the man she did, "I wanted a MAN to be the father of my children."

Teach the young girls and young women that the greatest work of all work of our great Creator is noble womanhood, and that it should be the conscientious and earnest desire of their lives to so live that when the time comes they may be the mothers of children worthy of themselves and their sires—that they may be able to clasp their child to their breast and give it the food and sustenance that God in His all-wise providence intended.

Let us go one step further and take these two anxious parents into our confidence and counsel with them as to the best methods of raising children. Ask them "where stands the parent who gives no instruction to his children, nor causes them to be instructed as to the laws of health and life? Does a good citizen, let alone a Christian parent, do his full duty by his children when he goes no further than the catechism, the confession or the prayer-book?" Tell them that there is no real reason why men should not live to the full age of three score years and ten in health and comfort, that they do not do so is because "they consume too much food and too little exercise. They take too much medicine and too little fresh air." Tell them to look to the education of their children, impress upon them the fact that "A vigorous body rightly educated gives a vigorous intellect, and give this intellect Bible teaching and it becomes the highest type of a Christian—a Christian from principle."

Advise them to teach their children to love the great outdoors. "To love the rose, the robin, to love their parents, to love their God. Let it be the studied object of their domestic culture to give them warm hearts, ardent affections. Bind your family together by these strong cords; you cannot make them too strong. Religion is love, love to God, love to man."

LITTLE MOTHERS OF MEN TO BE

Whether you frolic with comrade boys,
Or sit at your studies or play with toys;
Whatever your station or place or sphere,
For just one purpose God sent you here;
And always and ever you are to me
Dear little Mothers of Men to be.

So would I guard from all mean things;
From the dwarfing of wealth and from poverty's stings;
And from silly mothers of fuss and show,
And from dissolute fathers whose aims are low,
I would take you and shield you and set you free,
Dear little Mothers of Men to be.

And then were the wish of my heart fulfilled,
Around about you the world should build
A wall of Wisdom, with Truth for its tower,
Where mind and body would wax in power
Till the tender twig was a splendid tree,
Dear little Mothers of Men to be.

It is only a dream; but the world grows wise
And a mighty truth in the dream seed lies
That shall gladden the earth in its time and place;
We must better the Mothers to better the race.

IMPORTANCE OF HISTORY AND SYMPTOMS IN EARLY DIAGNOSIS OF TUBERCULOSIS

J. L. Spruill, M. D.
Superintendent Guilford County Sanatorium
Jamestown

At this time, when so much stress is being laid on physical findings and X-ray plates in the diagnosis of early tuberculosis, the general practitioner who has not had the opportunity of special training in physical examination, and who can not afford an X-ray machine, may feel that he is seriously handicapped in his work. Of course, no one will minimize the importance of either of these methods in arriving at a definite conclusion in many cases, but I feel that too often we are prone to overlook those subjective symptoms which alone, when properly evaluated and correlated, will often establish the diagnosis. Indeed, so frequently is this true that I feel that a carefully taken history and close inquiry into symptoms are worth more in the final analysis than are both the other two. And the greatest value is in the fact that the medical man does not have to be an expert to master this part of the examination. Any physician can learn to apply these in his work if he will study carefully the plain symptoms laid down in any good text book on the practice of medicine and use them in his work. If he will do this he can establish his diagnosis in the majority of cases without either physical examination or X-ray.

Unless the physician understands these, he will have difficulty in deciding whether or not he is dealing with an active case, for it is the history and symptoms, after all, that must decide whether or not we have activity. We can have no clinical active tuberculosis without symptoms, regardless of the X-ray and physical examination.

The thing we must aim at in practice is not only to discover tuberculous infection but tuberculous disease, and therefore to be able to decide as to whether or not treatment is needed.

To come to this conclusion we have to consider every phase of the patient. We must carefully observe the appearance of the patient, his previous history, and the symptoms which prompted him to seek his physician.

As to his family history, of most importance is whether he can give information as to exposure in infancy or early childhood. Questioning will frequently bring out the fact that in early childhood or infancy he lived with some old grandparent or other relative who had consumption, thus establishing almost beyond question his infection. Exposure in late childhood or adult life is not of such importance, as infection is by no means so frequent.

Age of the patient should not greatly influence us, as no age is immune, but we should remember that each age period seems to have its own form of the disease. In infants the acute general or miliary form is the rule, and it is here, by the way, that the mortality rate is highest. In children we may look for affections of the glands, bones and joints; in young adults chronic pulmonary tuberculosis; in patients over forty the fibroid type predominates; while in the aged we have a very chronic form with a symptom and course peculiarly its own.

The history of previous illnesses and their bearing on the present illness should be gone into. Pleurisy, for example, is now recognized as being tuberculous in the majority of cases, as are frequent attacks of "colds" and "bronchitis," "grippe," and particularly when patients state that they have had malaria without the usual definite symptoms, as malaria is frequently mistaken for tuberculosis.

Of greatest importance is the history of present illness, the mode of onset, and the causes which led the patient to seek medical advice. We should inquire into the symptoms that brought on the present ailment, with special reference as to general malaise, cough, expectoration, hemorrhage, lassitude (particularly in the afternoon), loss of weight, pleurisy, and night sweats. The condition of the appetite and digestion should be ascertained, and particularly should the patient be questioned as to diarrhea.

The patient's temperature is also of great importance. Active phthisis without fever at some time during the day practically never occurs. But here the statement of the patient is most of the time worthless, from the fact that he has not used a thermometer at all, or it has not been correctly used. The careless use of the thermometer in early cases of tuberculosis is worse than useless. To be of any value, the temperature should be taken every three hours from 6:00 a. m. to 7:00 p. m., and the thermometer should be left *under the patient's tongue* not less than ten minutes. A subnormal temperature in the morning, rising to 99.6 or 100 in the afternoon, and continuing for ten days or longer, usually mean tuberculosis.

Cough and expectoration early in the morning which persists for over two weeks should lead to suspicion.

Hemoptysis almost always means tuberculosis, excepting, of course, in certain forms of heart disease generally easily recognized.

Loss of weight, when not due to some other cause, should cause us to suspect tuberculosis.

Hoarseness continuing for any length of time means tuberculosis, and it may be well to mention here that any tuberculous con-

dition of the larynx is rarely primary, but almost always found as secondary to lung involvement.

Practically all cases of tuberculosis have rapid pulse and in most of them the blood pressure is low, but it may be well to mention that it is comparatively rare to find valvular disease complicating pulmonary tuberculosis.

It has not been my purpose to enumerate the various symptoms so well known by medical men and elaborate on them; nor has the purpose of this paper been to point them out, but rather to stress the point that by carefully considering and summing up these symptoms diagnosis can frequently be made from them alone.

The general symptomatology of active phthisis, therefore, can be ascertained by every practicing physician, and its bearing on the presence or absence of active conditions, especially in active cases, is of more significance than indefinite physical signs. There is no active tuberculosis without symptoms.

The history and symptomatology of phthisis, when properly studied and evaluated, gives information as to the onset of the disease, its activity and final prognosis. This can be ascertained by any medical man, and inasmuch as it frequently precedes the appearance of any physical or X-ray signs, the symptoms and history should come first.

DISCUSSION

THE CHAIRMAN: I would like to ask one or two questions. I wanted to ask whether the symptoms are the same whether the tuberculosis is glandular or whether it is the other kind.

DR. J. H. WILLIAMS, Sanatorium: Mr. Chairman, I think this section is very fortunate in securing Dr. Spruill, who has had so much experience in diagnosing tuberculosis in the clinics of the North Carolina Tuberculosis Association for the last three years, to give them the benefit of his experience at this time. Dr. Spruill found many cases of tuberculosis who are living, healthy and able to work and enjoy life because he diagnosed their disease early, when they could get it under control.

As Dr. Spruill has well brought out, it is often possible to make a diagnosis from history alone even when physical signs and X-ray are suspicious, especially to one not doing a great deal of chest work. Any hemorrhage of one ounce or more, pleurisy—especially pleurisy with effusion—and a chronic discharging anal fistula should be considered tuberculous in origin until proven otherwise. There are other less definite symptoms; namely, cough that lasts four weeks or more; "frequent colds and bronchitis"; loss of appetite; slight indefinite digestive disturbances; loss of weight, strength or energy; an afternoon temperature of 99 or more with normal or subnormal morning temperature; dyspnea on exertion; enlarged glands in the neck, which should make one suspicious of tuberculosis and warrant a thorough chest examination and, if necessary, X-ray by a chest specialist. The importance of these symptoms is increased if there are several present occurring chronologically

in the same illness and if there is a family history of tuberculosis or history of exposure to an open case of very active tuberculosis. Of course one cannot make a diagnosis in these cases unless he finds signs, but he can make a tentative diagnosis of tuberculosis and advise patient to see a chest specialist. Our state has many private physicians who make a specialty of tuberculosis by whom those who are able to pay can get an examination, and the North Carolina Sanatorium gives free examinations by appointment each morning except Sunday mornings, between the hours of eight and eleven. The Guilford County Sanatorium gives free examinations to residents of Guilford county, and the Extension Department of the North Carolina Sanatorium employs two physicians who hold clinics in towns and counties throughout the state. In very doubtful cases the specialist may have to use the history, physical examination and X-ray to make a diagnosis, and one may have to use the tuberculin test.

The laity believe that the X-ray will show any tuberculosis in the lungs from the favorite "spot" the size of a pin head on up, regardless of who makes or reads the plate, whether physician, osteopath or chiropractor. If Dr. A takes an X-ray and it does not show tuberculosis, they are very willing to believe that they do not have tuberculosis, regardless of how sick they are or who may have told them that they have tuberculosis, from a good history and physical examination. The X-ray is of practically no value unless taken by one thoroughly trained in X-ray of the chest, and even then it will occasionally be doubtful in very early active cases.

THE CHAIRMAN: As chairman of this section I took the liberty of going outside the medical profession and asking one or two of my friends to participate in the discussions in this section. I have persuaded Dr. Lee McBride White, Pastor of the First Baptist Church of Kinston, to give us a paper on Health and Good Citizenship.

HEALTH AND GOOD CITIZENSHIP

REV. LEE MCB. WHITE
PASTOR FIRST BAPTIST CHURCH, KINSTON

I appreciate very much the invitation that has come to me from Dr. R. S. McGeachy, chairman of your section on public health and education, to read a paper on the subject of health and good citizenship. It occurs to me that it is rather an unusual thing for a layman, such as I am, to read a paper to a group of scientists, such as you are, and also it is a little more unusual to invite a preacher to speak to such a body. Some months ago when Dr. McGeachy asked me to take part on this program I rather hesitated to do so, but believing that he was absolutely sincere, as I have always found him to be, I decided to take him at his word and prepare this paper for your consideration.

May I say this word in passing—that I believe that no finer work is being done any where for the welfare of the people than the public health work being done in North Carolina, and in such

places as Kinston under the leadership of such a progressive man as Dr. McGeachy. All the departments of public health are being carried on in a splendid way in my home town, even though under sad handicaps of material and equipment. Especially do I wish to call attention to the wonderful humanitarian work of Dr. James M. Parrott in the eye, ear, nose and throat clinic. Such work as this is making it possible for hundreds of children to develop normally and become good citizens in their respective communities.

I have selected this subject as an excuse rather than a topic for discussion. I shall leave to some expert a technical discussion of health and to some specialist on democracy a discussion of citizenship. I know that health, which is defined as a state of being hale, sound, or whole, body, mind and soul, is the real cause of any progress that we hope to make. That definition is all-inclusive. Because then health is not only that state of being free from physical disease or pain, but also that state of mind and soul that are free from disease. All three are so inter-related that it is difficult to disassociate the one from the other. The old Latin adage is true: "mens sana in corpore sano". Thus to be a good citizen one must first of all be healthy, and I am glad to see the time come when medical science is more concerned with keeping people well than to cure them after they have become sick. The researches in the realm of nutrition and physical exercise will no doubt, in the days to come, revolutionize the ways of living of our people. The effort to teach what foods are the best for our well-being and the effort to obtain shorter working hours for the working man are all tendencies in the right direction and will lead to a healthier and happier people. The work of Dr. McCollum, of Johns Hopkins University, in his studies of scientific feeding in which he points the way to health by a balanced diet, which he points out consists of not only proteins, carbohydrates and fats, but also the protective foods, milk and green vegetables, and the teaching of such physicians as Dr. Richard Cabot, of Boston, and others, that one must cultivate the habit of exercising in the open an hour or so a day, have made it possible for the average man to gain some practical knowledge of the laws of health. As I understand it, this is the tendency of modern medicine. If our people everywhere could adopt that attitude of mind that would lead them to talk over the matters of health and living with their family physician or specialist, it occurs to me that much would be gained in that progress which you are so devoutly working toward—the longer life of each individual.

As I said a moment ago, I am going to take this topic as an excuse to say something else to you. As I stated, I am a preacher, but that does not preclude my having an open mind on progress, not only in religious thought but also in scientific investigation. I personally deplore that state of mind of some of our preachers as well as some of our laymen who are opposed to the teaching of scientific truths in our schools and colleges. I also, on the other hand, deplore that attitude of mind of many scientists that their work is the last word of revelation. The one is just as intolerable to me as the other. Religion and science should not conflict and

when they do conflict it comes from misunderstanding, bitterness and bigotry. I am well aware of the description in the Old Testament of the early Hebrew world in Psalm 136; Psalm 24:1,2; Genesis 7:11, the earth was flat and was founded on underlying sea; Psalm 93:1; Psalm 104:5, it was stationary; Job 37:18, Genesis 1:6 to 8; Isa. 40:22; Psalm 104:2; the sun, moon and stars moved within this firmament, of special purpose to illumine man, Gen. 1:14 to 19; there was a sea above the sky, "The waters which were above the firmament", Gen. 1:7; Psalm 148:4 and through the "windows of heaven" the rain came down, Gen. 7:11; Psalm 78:23; beneath the earth was mysterious Sheol where dwelt the shadowy dead, Isa 14:9 to 11; and all this had been made in six days, a short and measurable time before Gen. 1.

In the words of one of our great thinkers: "This was the world of the Hebrews. Because when the Hebrews wrote the Bible their thoughts of God, their deep experience of Him, were interwoven with their early science, Christians, through the centuries, have thought that faith in God stood or fell with early Hebrew science and that the Hebrew view of the physical universe must last forever. In the seventeenth century Dr. John Lightfoot, Vice-Chancellor of the University of Cambridge, said: 'Heaven and earth, center and circumference, were created all together, in the same instant, and clouds full of water . . . . . this work took place and man was created by the Trinity on October 23rd, 4004 B. C. at 9 o'clock in the morning'."

So when astronomy and geology began to change men's ideas of the universe Christian leaders called these subjects "Not a subject of lawful inquiry", "A dark art", "Dangerous and disreputable", "A forbidden province", "An awful evasion of the testimony of revelation". In many respects this conflict is the greatest tragedy in the church's history. Do we not have a greater and a more sublime conception of God's universe when we have learned that there are millions of worlds larger than the one on which we live, and stars so large that if they were near our earth they would completely fill up the view before us?

Scientists have also been at fault themselves; they are human like other men. They go to extremes like other men who are obsessed with a certain degree of egotism. How ridiculous the statement of a professor of geology who seriously explained that the pyramids of Egypt were the remains of volcanic eruption, and that the aperture in the top of the pyramid was the crater of the volcano. Another scientist said on one occasion that sunlight was the creator of all things; that this was the explanation of energy. He even went so far as to say that Shakespeare did not write "Hamlet," for instance, but that the sun's rays playing upon Shakespeare wrote "Hamlet."

Science begins her study with what some one has called the sub-human side. These sciences are physics, chemistry, astronomy, geology and biology. This view presents a great world machine run by unchangeable law. Religion, on the other hand, starts with human life. Some one has said "Fall down in awe, science cries,

before this vast sub-human world!" And the religious man answers, "What world is this I am to bow before? Is it not the universe which my mind knows and whose laws my intellect has grasped? This universe, so far as it exists at all, for me, is apprehended by my vision, penetrated by my thought, encompassed by my interpretation. What is really great and wonderful here is not the world which I understand, but the mind that understands it—not the sub-human but the human. Man himself is the supreme fact, and all the world that man could bow before, man's mind must first of all contain. The master truth is not that my mind exists within a physical universe, but that the physical universe is encompassed by my mind. Therefore when I interpret life I will start with man and not with what lies below him." Each one here recalls, no doubt, the sublime words of Shakespeare in his description of man. Quotes: "What a piece of work is man, how noble in reason, how infinite in faculty, in form and moving how express and admirable, in apprehension how like an angel, in action how like a God—the beauty of the world, the paragon of animals."

The contribution of modern science to progress, railroads, telegraph, wireless, has been of untold blessing to us. The aim of Christianity is world-wide brotherhood and mutual understanding with all the races. Science has made possible what progress we have achieved. So science can be the hand-maiden of religion, for we need the faith of religion to lead us beyond the facts of life into the realm of the spiritual.

We shall not find God in nature unless we find Him in man. St. Augustine said: "Dig down deep enough in man and you will find divinity"—"God in Christ, reconciling the world to Himself."

DISCUSSION

Dr. W. F. Hargrove, Kinston: I think that we have a man in Kinston who thinks that religion and science run hand in hand and one covers the other. The paper is splendid and is of value to us.

The Chairman: As chairman, I want to thank you, for the entire membership, for this excellent paper. (Applause.)

RURAL MALARIA CONTROL

L. L. Williams, Jr., Surgeon, U. S. Public Health Service

Malaria has ceased to be a deadly disease in this country, but remains the greatest economic drag to the development of our Southern States. It has been estimated by a great student of malaria that this disease causes us an annual loss of five hundred millions of dollars. Truly an enormous handicap. This loss is not so much thru death or doctor's bills, nor is it so much thru the ravages of the acute attacks, but is found largely in the detrimental effects of chronic malaria, in the enormously lowered efficiency of the average worker in a malarious community.

I will give here but one instance which may serve as an example that could be multiplied over and over again. A small cotton mill village finds that during the five hottest months the average of idle looms daily ranges from 40% to 60%. The mill physician ascribes the high malaria rate as the cause. As a result the mill undertakes to control mosquito breeding and is entirely successful. Malaria ceases. We confidently expected, and were therefore not surprised, to learn that during the subsequent season there had been no idle looms in any shed. But, later in the year much food for thought was found in a statement of the mill president to the effect that not only had there been no idle looms, but that the average loom daily output had risen from 900 to 1200—an increase that in itself paid him 1500% on the control investment.

Now, it is almost axiomatic that a physician's income is dependent upon the economic status of his patients. Very seldom have I seen malaria form any very lucrative part of a physician's practice. It would seem that as business men (which physicians are not) the doctors of a section should support a malaria control program more steadily than any other class. And this program is most needed in the country sections, for malaria is more prevalent and more damaging in the rural districts than in the urban.

The history of malaria control has been peculiar in that it has all been backwards. Our problem has been in the country and we have worked in the city. This has been natural in that the first methods of malaria control were applicable to cities and not to country districts. Malaria is carried by a mosquito. This mosquito breeds in water. Drain all standing water, prevent mosquito production and stop malaria. Such procedures are costly and can only be applied where many people benefit within a comparatively small area—where the cost per person is low. The drainage necessary to protect a single farm house may be just as extensive as that for a town of a thousand inhabitants; the cost per person reasonable in the town and prohibitive on the farm.

In considering urban control only one factor in the transmission of malaria was used—the breeding of the mosquito. Since the early days of work many more factors have been studied until today, when grouping all factors, we see the feasibility of economic rural malaria control staring us in the face and crying out for application. But, we cannot stick to just one factor. There are certain fundamentals of rural malaria control that rest upon observations that have been made in the last few years and in their consideration it is necessary to consider the mosquito transmission of the disease and some of the habits of mosquitoes.

As we all know, malaria is carried by anopheles mosquitoes and by them only. This genus is remarkable in certain of its habits. In the first place it practically never breeds in any artificial container. It seems to require natural and reasonably clean water. In the second place it flies and bites only at night. Of the Anopheles we have on this coast three species: Quadrimaculatus, Crucians and Punctipennis. All three of these have been proven capable of transmitting malaria. However, there is a great deal of doubt as to

whether they all do so transmit the disease under natural conditions. This bears a very important relation to control. It has been indicated that the role of punctipennis in the connection of malaria must be very slight and many believe that it is of no sanitary importance. This to me seems reasonable, for punctipennis is a porch biter, not an indoor pest as is the quadrimaculatus. To a lesser extent the same is true of Crucians—they do not seem to care to enter our homes. Quadrimaculatus, on the other hand exhibits a decided preference for indoors and seems to like bed rooms above all others. Certainly it will not bite even at night in a reasonably well lighted room. It seldom bites a moving person. It requires darkness and quiet; conditions well fulfilled in the sleeping quarters.

Prevent access of Quadrimaculatus to human beings and I believe we would wipe out malaria. This can be more simply accomplished than complete mosquito eradication, for quadrimaculatus shows decided preference for certain types of breeding areas. The majority of breeding observations have been to the effect that quadrimaculatus is a pond breeder. Punctipennis and Crucians are found in sluggish streams, in pot holes, and eddies in brooks—but rarely do such places show quads—and then in very few numbers.

This has a decided application in rural districts. It is often impracticable to drain a country side completely and yet simple to drain the one or two small ponds within a half to three quarters of a mile of a farm house, or group of country homes.

Perhaps the ponds are not drainable. May be there are too many or the grade too flat. They can be stocked with gambusia—the little top minnow prevalent in all of our streams. This little fish is a very good hunter of mosquito larvæ, particularly of the anopheles larvæ. These little fish do not insure 100% protection, but, under most circumstances do insure an enormous reduction of breeding in the average pond and thus produce a very appreciable measure of anopheline control. Failing in these measures we can often secure breeding control thru the use of paris green. A small quantity of this powder mixed with a large amount of road dust can be cheaply applied to large breeding areas thru the aid of a light wind. The only disadvantage is the necessity for numerous reapplications each season. The measure is, however, quite effective.

Let us go a step further in the discouragements often encountered and suppose that drainage is impracticable, that water vegetation is too prolific to allow fish control, that the area is too large for oiling or paris green application, and we see that control of anopheles breeding is out of the question. But, we have another measure of protection to fall back upon. It will be recalled that mention was made of the night flying habits of anopheles, the indoor biting of quadrimaculatus in particular. Members of the average rural household retire indoors soon after dark and remain therein until sun-up. A well screened house under such circumstances offers excellent protection. If all homes were adequately screened I do not believe we would longer be faced by a malaria problem.

Now "adequate screening" is a totally different term than simply "screening". An adequately screened home excludes mosquitoes. A home screened with 14 mesh wire does not keep out anopheles, nor do sagging screen doors or ill fitting window frames. Unscreened chimneys and open drip holes in the kitchen offer easy ingress to a number of anopheles each night. These mosquitoes can be excluded by using 16 mesh wire, and using it over every opening to the house.

There is a class of homes that do not lend themselves easily to screening. I refer to those poorly constructed houses, the roof, walls or floors of which are of single planking with many gaps and cracks. It may cost more to screen such a house than to rebuild, but I know of many where it was cheaper and entirely effective to adequately screen one or two bed rooms—and malaria disappeared.

But what of the negro tenant "shack." Totally unscreenable, often built within easy flight range of an extensive swamp or marsh and in a highly malarious neighborhood. It would seem that these were beyond the pale and outside the scope of the worker in malaria control. In former years such places could be attacked only by the use of quinine. And it has never been observed that a whole countryside took kindly to quininization. Acute observation here developed another measure. Coogle, knowing the predilection of anopheles for the underside of bridges as daylight roosting places, observed that such was not true if the bridge were constructed of creosoted timbers. He therefore proceeded to spray the inside of unscreenable negro shacks with creosote and found that two gallons to a room proved a very effective anopheles repellant. During last season hundreds of such places were regularly creosoted with great success. An application is good for six or more weeks, and instead of being resented, most tenants asked for reapplication as soon as the creosote smell began to fade.

I mention these diverse conditions of malaria control measures and a few of the habits anopheles to show that there is no malaria situation without its reasonable solution. Control is always possible. It may be slow, but there is no reason why a county health officer should not ultimately remove malaria from his field.

In his work the health officer should have a definite program. Thru school census cards he (or the state for him) should secure a history index of the distribution of malaria in the county. Physicians in the county should report all cases to him—and then he knows where to work first. The next step is to commence education in the schools. Introduce a malaria course in every school in the county. It is easy and interesting and will bring a large return. Mention prominently malaria control in public lectures and addresses—a health officer is called upon frequently to talk in public.

Each community should be surveyed one after another. Any local resident can show a health officer or inspector all of the water within half a mile. A little dipping for larvæ reveals the relative amount of anopheles breeding. He knows the breeding, he knows the malaria, the solution is merely a question of judgment. I know

one place where the railroad was induced to drain its right of way, thus giving outlet for two small ponds. Another where road drainage proved similar. In one community four ponds were drained and a small seepage area regularly paris greened and control is well nigh perfect. All secured thru the efforts of a local health officer. Another where breeding areas were undrainable and three ponds were stocked with gambusia. One town I know of was surrounded by swampy land and the health officer induced the complete screening of all of the eighty odd houses and scored a conspicuous success in the reduction of malaria. It can be done.

In many counties, home surveys by the health officer or sanitary inspector include search for anopheles breeding and advice to the householder concerning protection. Sometimes it is a little drainage, sometimes fish control, sometimes only bedroom screening or creosoting. Advice is not always taken, but the good seed is sown and will eventually take root and grow. On the other hand I well remember visiting a farm house in a county without a health officer and remarked the fact that two ponds along the road were covered by an iridescent film of kerosene oil. Control was complete. There were three children in the house and the course in malaria was taught in the school. The result was heart warming.

The health officer needs the co-operation of the physicians. They, and they only can tell him of new infections. They can help in the educational program. The physician is believed and his advice taken when an inspector is often disregarded or even laughed at. And it is up to the physician to produce complete cures. There is some advantage to the patient in removing the chills and fever in a series of treatments extending over a single week, but none to the community in loosing a malaria carrier to infect numerous anopheles which in turn may infect many persons. Why not urge the standard treatment and see that quinine is taken for eight weeks and most of these potential carriers sterilized of infection.

In concluding I wish to draw your attention to the enormous increase in county health departments in malarious counties within the past five years. Before the development of rural malaria control, malarious counties were somewhat avoided. Now they are hunted for. The health officer has the knowledge, he is getting the coöperation of his physicians, and he is using education. The average person is capable. If given the facts and aroused to enthusiasm the result is inevitable. Malaria will disappear.

DISCUSSION

The Chairman: The discussion will be led by Dr. H. A. Taylor, Deputy Health Officer, in charge of anti-malaria work in eastern North Carolina.

Dr. H. A. Taylor: In discussing Dr. Williams paper it seems to me that he has mentioned every practical recognized factor to be considered in outlining a program for rural malaria control. In summarizing the various factors mentioned in an attempt to outline control, it appears to me that one point stands out, and that is that there

must be thorough familiarity with local conditions causing infection, and that can only be gained by a thorough survey of the localities under consideration. With a clear cut knowledge of the cause of the mosquitoes, with their breeding places and the economic status of the population, one can outline an exact program of control in any given rural section provided he lets the conditions and circumstances in that section notify him what measures of protection to take. With reference to preferential breeding places of the three species mentioned by the doctor, there is a difference of opinion as to the transmission of disease and I doubt if we have sufficient proof at hand at present to warrant applying control measures where we find only quadremaculatus. I am inclined to advise that all collections of water, whether ponds or streams, be considered potential sources of danger until proved otherwise.

In reference to the use of quinine in control measures there is also a difference of opinion, but when one considered the excellent results obtained by Dr. Bass of Mississippi in dealing with malaria, we are compelled to admit that the disease can be controlled by this one method alone. It is now the policy of the State Board of Health in dealing with rural malaria control to consider each home a unit unto itself, applying whatever mosquito methods local conditions around the home warrant, and advising sterilization of those found by blood analysis to be infectious.

THE PRESENT STATUS OF THE EXPERIMENT IN POST-GRADUATE MEDICAL TEACHING IN NORTH CAROLINA*

I. H. Manning, M. D., Dean Medical Department
University of North Carolina, Chapel Hill

The discoveries in medical science and the technical aids to diagnosis have advanced so rapidly during the past twenty-five years that keeping up with them has become a real problem to those actively engaged in a general practice.

It is safe to say that all that has been discovered or devised for the relief of human suffering is to be found in the current literature, for, to the everlasting honor of the profession, there are no patents and no secrets. However, in these days of the linotype medical literature has become voluminous. Much of it is for the specialist, and the process of extracting the really helpful suggestions from the mass has become laborious. One can not be quite sure that what he reads is altogether sound and safe in practice.

An occasional post-graduate course in one of the large clinics is unquestionably the easiest and most desirable way of keeping up with what is actually going on. Statistical studies of methods and remedies are easily made and experience accumulates rapidly in the large centers of population, so that one may learn the accepted procedures very quickly. An occasional postgraduate course for

*Read by Mr. C. D. Snell, Director University Extension Division.

those physicians who are doing a village-country practice and are kept at home by insistent professional obligations is impracticable, if not impossible, and, however desirable, such a method of keeping up can not be adopted.

In 1916, as many in this audience will recall, Dr. Rankin proposed a unique plan of postgraduate teaching, which has since become known as the "North Carolina Plan," and has been carried on by the Extension Division and the Medical School of the University. This is the first systematic effort in extension medical teaching—that is to say, teaching away from an established school. Sporadic efforts have been made in several states, all for the same general purpose, but each has followed a different plan.

In Wisconsin the university has sent out lecturers to talk on special topics at the meetings of the medical societies, but there are no regularly organized classes. In Sayre, Pennsylvania, a group of physicians, including those practicing in the nearby villages, organized themselves into a class which met in a well-equipped hospital and invited the Postgraduate School of the University of Pennsylvania to give them a series of twenty-five lectures and demonstrations. In Kansas series of clinics in children's diseases, covering a period of a week or ten days, have been held in various places. All of these efforts are experimental and designed to put into the hands of the general practitioners the worthwhile developments in medicine.

The North Carolina plan is our experiment; the idea originated in North Carolina and if it has merit we wish to prove it by successful demonstration. We have conducted courses on this plan for three years now and it is time to take stock of what has been accomplished—to find out where the plan is at fault, to remedy these faults, and to make any and all improvements possible.

The following statistics have been furnished by Mr. Snell of the University Extension Division:

Total number of circuits, 8—two in pediatrics in 1916, two in medicine in 1922, three in medicine and one in pathology in 1923.

The total number of towns in which courses have been given is 48. In 15 of these two or more courses have been given. The towns are located in nearly all sections of the state from Waynesville in the west to New Bern in the east.

The total number of physicians registered in the three years is 748—169 in 1916, 199 in 1922, and 380 in 1923.

The attendance in all years has averaged 81.5 per cent, 76 per cent in one circuit in 1916, 84.2 per cent in all circuits in 1922, and 83.7 per cent in all circuits in 1923. The attendance is highly gratifying, considering the fact that the physicians taking the lectures were engaged in active practice and in many instances lived from ten to twenty miles from the town in which they were given.

The questionnaires that were mailed after the completion of each course to all physicians registered have been very generally and, we hope, frankly answered. Two of the questions are of special interest:

(1) Were the lectures excellent, good, fair, passible, or poor? In 1923 64-45 per cent answered excellent and 30.51 per cent answered good. In other words, 95.02 per cent answered good or better.

(2) Were the clinics excellent, good, fair, passible, or poor? 10.7 per cent answered excellent and 41.4 per cent good; that is, 52.1 per cent answered good or better.

It will be observed that the character of the lectures was regarded as very much better than the clinics. It seems to me that the clinics are vastly more important than the lectures.

The "bedside" method of teaching clinical medicine as a substitute for the lecture system was introduced into the country by the immortal Osler. After thirty years it has become the approved method in all schools. The ward and the dispensary are the laboratories of clinical medicine. I do not believe that worthwhile teaching can be done without an adequate variety of well-chosen cases for purposes of demonstration. The clinics given in connection with the extension courses have been excellent in some places, in others entirely inadequate. Personally, I have been disappointed because of my conviction that the physicians taking the course could not get full value without good clinics.

I have the feeling that the teachers we have chosen, coming from the large clinics, could be of real service in demonstrating the most approved methods of diagnosis and treatment and could help substantially in the diagnosis of the difficult cases which the general practitioner finds in his daily practice, thus making our courses of distinct and lasting value. We are entirely dependent upon the co-operation of the local physicians to furnish the clinical material. Will you not help us out in improving the character of the clinics? North Carolina is as rich in variety of diseases as in minerals.

DISCUSSION

Mr. Snell: It seems to me that this plan of post graduate medical instruction has been successful. A number of other states are copying it. Hardly a month that goes by that I do not receive letters from other universities or doctors in other states asking how it operates. It is the only one that operates on a large scale. Some of the states have two or three days' clinics at the medical association meetings, but this is the only one that I know of that has as much as three months. We sent out 380 questionnaires and 305 were returned. I think that is remarkable. The percent replying to the questionnaire was 80.3. The attendance record for 380 men for the whole summer was 83.7 per cent. When you consider that general practitioners took the courses and they are always subject to emergency calls of every description which might keep them from attending, I think that is marvellous. Few colleges throughout the year can show better right on the campus. 316 attended nine or more of the meetings, which shows that the course was successful from the attendance point of view. It meant a sacrifice to attend and they

were certainly interested. The attendance record in some of the cities was almost perfect. In one city where 24 doctors took the course there were only 12 absences during the whole summer. A question that we asked was: "Frankly, did you or not get the worth of your time and money from this course?" The doctors do not have to put down their names to the reply, so they can be frank. 274 said "Yes," that they got the worth of the money and time, or more than that. 17 doctors, or 5.6 per cent said "No." Five of the seventeen qualified by giving the reason that they were unable to attend regularly. The others were indefinite on the question.

I shall be glad for you to ask any questions about the work. The courses this year are in pediatrics. We have secured two of the finest men in the country. Dr. McKim Marriott became greatly interested in the work and when we approached him he turned over for use for the summer two of his best men, Dr. Cook and Dr. Jeans. Dr. Cook is giving a course in Rutherfordton, Shelby, Gastonia, Charlotte, Lincolnton and Concord; Dr. Jeans, assisted by Dr. Hartman, will be at Durham, Sanford, Pinehurst, Lumberton, Hamlet and Fayetteville. We want to go slowly and make good every year.

THE CHAIRMAN: Does anybody want to ask any questions or remark on the work. Can you say what you think of the course, Dr. Hargrove?

DR. W. F. HARGROVE, Kinston: I think that everybody was thoroughly satisfied with the work on internal medicine. Our attendance was pretty good, I thought, and as a whole I think they were very well satisfied. I know that I would like to take it again this year. I think we could get that same crowd to come for another year.

THE CHAIRMAN: I would take it again this year. That is how pleased we were in Kinston.

RABIES IN NORTH CAROLINA AND ITS PREVENTION

C. A. SHORE, M. D., DIRECTOR STATE LABORATORY OF HYGIENE, RALEIGH

In rabies we have a disease which was recognized and described more than two thousand years ago. It has been studied by some of the greatest scientists of modern times and our knowledge of it is remarkably complete. We know its cause, the method of infection, the means whereby it is spread; we know much of its pathology, including the path which the infection travels in the body, we know the chief organ attacked and we can readily demonstrate the infecting organism on laboratory examination. The mysteries of the onset of rabies in the dog, are mysteries no longer, the apparent wide divergence of symptoms are thoroughly understood, and finally we know exactly how the disease can be eradicated.

There is possibly no other disease about which we have a fuller knowledge and yet we are content to use the palliative measures of

prophylaxis instead of wiping it out altogether. The very efficiency of the prophylaxis doubtless contributes to our negligence but there are still a few deaths in man with a vast amount of suffering and economic loss in live-stock, and the existence of the disease in any country is a reflection on its civilization and on both the medical profession and on the government which permits it.

No statistics of any kind are available for the incidence of the disease in farm animals, and in dogs only so far as indicated by the heads sent to laboratories for examination. All workers agree, however, that the disease is on the increase throughout the United States. In North Carolina the increase in the number of mad dogs and in the number of persons exposed is shown in the figures of the State Laboratory of Hygiene from August, 1908, to the present time.

Animals examined:

	Positive	Negative	Total	Patients Treated
1908 (5 mos.)	20	13	33	42
1909	83	24	107	157
1910	73	93	166	159
1911	87	54	141	151
1912	151	126	277	224
1913	179	145	324	297
1914	169	195	364	191
1915	136	157	293	181
1916	155	212	367	250
1917	296	264	560	362
1918	237	216	453	459
1919	229	191	420	517
1920	207	206	413	473
1921	323	224	547	643
1922	381	540	921	855
1923	593	560	1153	1108
1924 (3 mos.)	170	112	282	240
Total	3489	3332	6821	6309

ANIMALS EXAMINED FOR RABIES
AUGUST 1908—MARCH 1924

	Positive	Negative
Dogs	3178	2613
Cats	211	526
Cattle	60	82
Horses and Mules	8	26
Hogs	15	63
Goats	4	2
Rabbits	5	9
Squirrel	0	3
Sheep	2	0
Wolf	0	1

	Positive	Negative
Fox	2	1
Rats	0	2
Chickens	0	2
Human	4	2
Total	3489	3332

The organisms pathogenic of rabies have never been cultivated on artificial media but they are readily demonstrated on microscopic examination and they are supposed to be protozoa. They are round or oval structures and found within the nerve cells of the brain, particularly in cells of the hippocampus. They were first discovered by Negri, some twenty years ago, and the finding of the "Negri body" is universally accepted as a positive diagnosis of rabies. (A negative report from the examination of a well-preserved brain has a great deal more significance than one negative report of the examination of sputum for tuberculosis.)

Infection in any animal can be produced only by inoculation, and the usual method is, of course, by the bite of a dog. On first entering the body the organisms cause no symptoms and probably soon die unless they can enter a nerve fibre. If they do gain entrance to a nerve fibre, they travel slowly to the brain and this journey may take from two weeks to twelve months. The extent of this latent period depends in large part on the actual distance of the point of inoculation from the brain. Bites on the face and head, especially on the nose, have the shortest distance to travel and have notoriously a short latent period. Such bites are occasionally fatal in spite of prophylactic treatment because the infection may reach the brain before the treatment can protect.

We all know the history of the preparation and trial of the protective virus by Pasteur. It is one of the most dramatic chapters in the history of medicine. Essentially the treatment consists of the injection of emulsions of the spinal cords of rabbits which have died from a very rapid form of the rabies. Pasteur subjected the cords to a process of drying, thus attenuating the virus, but it has now been shown that the infection after passing through a long series of rabbits has an extremely low virulence for man. Fresh emulsions of the brain of these rabbits has been used in treatment, but in our laboratory we adhere somewhat closely to the original method of Pasteur, differing chiefly in the greater number of injections. The record of the laboratory has been good and less than one person to the thousand treated has been lost. For this reason we have never felt justified in changing the method of preparation of virus, merely because other methods may be somewhat simpler. One of the latest modifications was one proposed by the Japanese, who advocated the giving of one dose of a highly concentrated virus. This method has been extensively tried in this country on dogs and other animals. The results obtained seem to be that protection is secured in about seventy-five to eighty per cent of those treated. The treatment may be prepared with little cost but the

only practical use for this method at present is for the possible protection of live-stock. It should never be used in human cases and, in my opinion, its value in immunizing dogs has a questionable value, and it gives a false idea of security, and because we have a better method of prevention.

This brings me to the second part of my paper and the part which I especially wish to emphasize. It is possible to completely eradicate rabies and I would like earnestly to solicit the help of every doctor in North Carolina in the plan which I propose.

It is not my plan but it is a method which has been thoroughly tested and tried out. Its only limitation is that the help of other states is needed. Eventually we must all come to it and I would like to see North Carolina lead the way.

The problem of rabies centers in the dog. Other animals are just as susceptible but except in comparatively rare instances, it is only the dog which spreads the infection. The muzzling of all dogs which run at large coupled with a quarantine against imported dogs would completely eradicate rabies in from two to five years. After that period the muzzling could be omitted, as there would be no necessity for it. As already mentioned this declaration is not based on theory alone. The results have been demonstrated several times, notably in England and also in Norway and Sweden. England adopted the plan about twenty years ago and there was not a single case of rabies in Great Britian for many years until it was reintroduced by a dog smuggled into the country by an areoplane during the late war. There was little time to spare for rabies and this dog infected many others. After the war it became necessary to go back to the old measures of muzzling and restriction. I believe that the disease has once more been eradicated.

Australia and New Zealand, since their settlement by white men, have had a quarantine law against imported dogs, and rabies has never been introduced.

It seems inexcusable to permit the contagion to be propagated indefinitely in our country. The medical profession should be the chief advocates of eradication, but all dog lovers and all owners of dogs and all men who own live-stock would be benefitted as well and should be interested in eradication. The muzzle itself, if properly fitted, causes no more suffering than the bridle to the horse and it need only be worn when the dog is at large.

The necessary legislation will not be easy to secure and it will be still harder to enforce the law unless the public is fully informed of its object and necessity and here is where we can all help.

For sixteen years, at the State laboratory of Hygiene, we have daily come in contact with rabies and with its prophylaxis. Daily we see distress and suffering and economic loss, all of which could be prevented.

I am not opposed to the attempted immunizing of dogs according to the Japanese method, but it is only partially successful and

at best can only diminish the number of cases. I sincerely believe that the muzzling of all dogs which run at large is the only effective means of eradication.

DISCUSSION

THE CHAIRMAN: This is a subject that comes right home to most of us. A few weeks ago a man walked into my office and asked: "What is the chance of a man's getting well from hydrophobia?" I said, "None, if the doctor has made a correct diagnosis. If he gets well the doctor has made a mistake." He said, "Has anybody gotten well of it?" I said, "No, not if he had hydrophobia. If he did he died." Then he said that he had just received a telegram that his brother had hydrophobia. That is the way he approached it; he came at me in such a way that I didn't know what he was driving at. The next day the brother died. Those things come home to us. I have seen one case of hydrophobia and if killing off every dog in the United States would prevent a thing as horrible as hydrophobia, it would be well worth it, for it is one of the most horrible things that mortal man is called upon to witness. Is Dr. Smith from Wilson in the house? He was very enthusiastic on the subject of immunization of dogs last year. I don't know how he is this year. He advocated it right strongly.

DR. SHORE: I do remember some correspondence with Dr. Smith, but don't know how far he went. I think it is a good thing and will prevent some cases, but that is not the way to eradicate it. There is no doubt that the immunization of dogs, as now attempted, will prevent a good deal of rabies, but the protection is not perfect, while by the plan which I have outlined we may hope for complete eradication. If we could give all dogs a full series of twenty-one injections we would get almost perfect protection, but this method is too expensive to be a practical measure.

DR. JOHN A. FERRELL, New York City: I would like to ask a question, that is, as to whether or not the rabies found in dogs is transmitted solely from dog to dog, or whether there may be infection carried by wild animals which in turn is transmitted from wild animals to dogs. The question is prompted by discussion I have heard in the Pacific states with reference to the importance of the coyote in transmitting rabies in those states. It is rather an important factor there. My impression is, as the Doctor stated, that the dog is the animal of real importance, but I would like to know if the wild animals carry a certain amount of infection and transmit it in turn to dogs.

DR. SHORE: Where there are any great number of wild animals of the canine race it would be difficult to eradicate rabies. We have no wild wolves in North Carolina, or the eastern part of the United States, certainly to no extent, so that the problem is simpler with us than it is in Russia, and in the Rocky Mountain region. They did not have rabies out there until recent years. California and the Pacific Coast were reported free from it until the last ten or fifteen years, and now there is a good deal of it there. There is something peculiar

in the dog race of animals in that when the brain is attacked a certain per cent of them wish to bite; sometimes they wish to bite only dogs, and sometimes certain other animals, and sometimes it is man. Many rabid dogs do not exhibit the biting mania at all. It is no reflection on the character of a well dog. The rabid dog is an insane dog, an animal with nerve cells destroyed.

Dr. L. W. Corbett, Goldsboro: We have just had an ordinance passed in Goldsboro to try out the inoculation of dogs. I had correspondence with Dr. Shore and he said that we might try it, that it was not the ideal way but that we might try it while we were waiting for something better. Our local veterinarian is administering it. The city manager was distressed that it wouldn't cost $25 or $30, because that might eliminate the dogs, but cost only $2. We are getting good co-operation on the part of the citizens. They are nearly all on the waiting list to get dogs vaccinated. People are becoming so versed in the dangers of rabies that we have three taking full treatment that haven't been bitten, that helped wait on dogs while sick, just trying to prevent any trouble.

Question: How long would it be safe after a person is bitten to begin to use it? Give a general idea. One reason why I ask is that very often in my section a person is bitten and I do not know whether there is anything the matter with the dog. I say, "Let's wait and see if there is anything wrong with the dog, any trouble with the dog," but they go ahead and kill it. I think it is better to see if there is anything the matter with the dog.

Dr. Shore, closing the discussion: All I can say is to start treatment as soon as possible if the dog was mad. The latent period may be as long as twelve months. If we find that a person has been really bitten by a rabid animal and we found it out ten months afterwards, we couldn't do anything but advise treatment. We might be able to stop it. There are a great many people who take prophylactic treatment who might not go mad, but we can't tell. We are often able to advise persons that, in our opinion, treatment is not necessary. If a person has been bitten by a dog which shows no sign of rabies, it is best to keep the dog alive and under observation for a week or ten days. If there are bad bites in the face it is better to start treatment, and then stop it if it is found that the dog is not mad. If it is a very slight bite you can wait with safety for development in the dog. The dog can only give the disease during the time that he is sick, or a day or two before that, and if the dog remains well for ten days after the bite is inflicted we can be sure that the person who was bitten is in no danger.

A BRIEF STUDY OF THE RECORDS OF THE RECRUITING OFFICE AT FORT BRAGG, N. C.

T. H. McAndrews, Lt. Col. M. C., U. S. A.
Fort Bragg

In presenting to your distinguished body the Section on Public Health and Education, the following statistics obtained from the records of the recruiting office at Fort Bragg, the only military post in this state, my principal object is to invite your attention to the existence of the many physical defects existing in the youth of today and of which you may or may not be cognizant. This condition does not apply solely to any particular section, but is general, as you will presently see. No attempt is made herein to enquire into the cause or causes of so high a rate of physical defects that being left to the persons directly concerned with the assumption that proper action will be taken in course of time.

It was not until our entry into the greatest war in history, a time when our resources in man power were taxed to the utmost that the great majority of our population came to realize the fact that nearly one third of our young men of military age were unfit to bear arms in the defense of their country. This deplorable state of things was doubtless realized by the medical profession at large, but being in the minority, their opinion, had it been expressed, would hardly have been heeded, in fact, they would have been considered alarmists had they voiced their opinions.

This condition of physical unpreparedness was well known to the army, the knowledge having been gained by years of experience in recruiting, but to the people who gave little thought to military affairs, who felt secure in our condition of preparedness, a false security, these facts came as a surprise and a shock, and wonderment was expressed that such a state of things could exist.

The lessons learned from war experience are soon forgotten, and today the average citizen has fallen back into the pre-war habit of placing bodily health and physical training in a secondary place in the daily routine. There is a Spanish proverb, *"No hay mal que par bien no venga,"* which literally means, there is nothing so bad but good comes of it, and let us hope much good will come out of our late experiences.

The physical condition of our young men is not only important from a military point of view as we look at it, but is highly important from a civil and industrial point. All industrial concerns realize that manual efficiency depends upon physical fitness, and to get the maximum efficiency the employees must be kept as near 100% fit as possible.

It has been said that the business of the army surgeon is to keep the unfit out of the army, as they would only be casualties. That is true in a certain sense, but we are also interested in getting the very best material, as it is very much easier to train the vigorous

and make good soldiers of them with a less expenditure of time and money. We do take men with certain defects and by careful training build them up and not only make good soldiers of them but better equip them for useful citizenship when they return to their homes.

Much good is being done for the youth of today by the various athletic clubs, where under the guidance of trained instructors the physical needs of the body are being cared for, but this system does not extend to the rural districts where it is mostly work and little play.

The following figures are taken from our records for the entire year of 1923, and which vary but little from the figures for 1922; the percentages are almost identical. On that account it was thought one years record would be sufficient.

Total applicants examined	1333
Total accepted	789
Total rejected	544
Percentage of acceptances	59.19
Percentage of rejections	40.81

APPLICANTS BY MONTHS

	Accepted	Rejected
January	59	53
February	49	40
March	50	85
April	31	32
May	49	41
June	66	20
July	66	88
August	84	85
September	61	36
October	80	27
November	85	19
December	109	18

It will be noticed during the last four months the number of rejections showed a decided decrease. The new army regulations in effect after August, rejections by sub-stations for such conditions as might be recognized by a layman were not figured in reports. These had been previously charged to the medical rejections, as had also rejections for non-medical conditions such as criminal records, under age, etc.

The explanation for this changed condition is that soldiers detailed on recruiting duty in the towns and cities are given definite written instructions regarding the examination of each applicant. By following this set of instructions he is able to detect the disease and reject an applicant who has trauchoma, strabismus, vision under 20/20 and 20/70, hearing 15/20 and 20/20, discharge from ears, under height, under weight, insufficient chest measurement,

obesity, deficient teeth, anchylosis of joints, hernia if marked, venereal diseases, body parasites and illiteracy. Some men become quite expert from experience, and thus save valuable time and money for the army by their cleverness in detecting defects.

Acceptances during first eight months of 1923	434
Rejections during first eight months of 1923	444
Percentage of rejections	50.56
Acceptances during last four months of 1923	355
Rejections during last four months of 1923	100
Percentage of rejections	21.98

Rejections on account of heart conditions::

FIRST EIGHT MONTHS OF 1923	145	or 32.60%
Systolic murmurs	109	or 75.17%
Tachycardia	14	or 9.66%
Heart conditions not classified	12	or 8.21%
Enlargement	9	or 6.21%
Arythmia	1	or 0.69%
LAST FOUR MONTHS OF 1923	23	or 23.00%
Systolic murmurs	4	or 17.39%
Tachycardia	1	or 4.35%
Not classified	18	or 78.26%
Enlargement	0	
Arythmia	0	

"In the examination of hearts systolic murmurs unassociated with a history of rheumatic fever or with other acute infections, with enlargement of the heart, with alterations of the first sound or with abnormal response to exercise, may be considered without significance."

Other causes of rejection:

	First eight months		Last four months	
Eyes, including three cases trachoma	31	6.98%	12	12%
Ears, otitis media	28	6.30%	2	2%
Ears, other conditions	5	1.12%	6	6%
Nose and Throat	4	0.90%	0	
Teeth, deficient	8	1.80%	3	3%
Teeth, pyorrhoea	2	0.45%	0	
Mental, unclassified	5	1.12%	1	1%
Illiteracy	15	3.37%	0	
Epilepsy (history of)	1	0.22%	0	
Enuresis	5	1.12%	0	
Moron	0		1	1%
Emotional instability	0		1	1%
Poor physical development	56	10.36%	15	15%
Lungs, suspected T. B.	0		2	2%
Mouth breather	2	0.45%	0	
Nephritis and albuminuria	29	6.53%	12	12%
Hernia	14	3.15%	6	6%
Orthopedic conditions	27	6.08%	10	10%
G. U. gonorrhea	6	1.35%	0	
Syphilis	9	2.02%	1	1%

	First eight months		Last four months	
Venereal, unclassified	0		4	4%
Undescended testicle	0		1	1%
Rheumatism, unclassified	1	0.22%	0	
Scabies	4	0.90%	0	
Non-medical conditions (under age, consent, etc.)	47	10.58%	0	

Of the total number of applicants rejected the occupation was given in 377 and of that number the percentage rejected for heart, nephritis and albuminuria were: heart, 33.15%; nephritis and albuminuria, 7.16%.

The following table shows occupation and percentage of rejections in each.

		Percentage of total rejections	Heart rejections	Percentage of heart rejections in each class	Percentages heart in each class to total rejected	Rejections due to albuminuria	Percentages of albuminuria rejections in each class	Percentages, albuminuria in each class to total rejected
Laborers	136	36.07	43	31.69	11.40	9	6.61	2.39
Farmhands	97	25.73	33	34.02	8.75	4	4.12	1.06
Textile workers	25	6.63	11	44.00	2.91	1	4.00	0.27
Mill hands	25	6.63	11	44.00	2.91	2	8.00	0.53
Mechanics	16	4.24	3	18.75	0.79	1	6.25	0.27
Chauffeurs	16	4.24	4	25.00	1.06	3	18.75	0.79
Clerks	9	2.39	2	22.22	0.53	1	11.11	0.27
Carpenters	9	2.39	3	33.33	0.79	1	11.11	0.27
Painters	6	1.59	3	50.00	0.79	0	0	0
R. R. workers	6	1.59	1	16.66	0.27	1	16.66	0.27
Salesmen	4	1.06	1	25.00	0.27	1	25.00	0.23
Students	3	0.79	1	33.33	0.27	0	0	0
Weavers	3	0.79	2	66.66	0.53	0	0	0
Musicians	3	0.79	1	33.33	0.27	0	0	0
Movie operators	2	0.53	1	50.00	0.27	0		
Baker	1	0.27	0					
Barber	1	0.27	0					
Blacksmith	1	0.27	0	0	0	1	100.00	0.27
Boiler maker	1	0.27	1	100.00	0.27	0		
Bricklayer	1	0.27	1	100.00	0.27			
Cook	1	0.27	0					
Electrician	1	0.27	0	0	0	1	100.00	0.27
Upholsterer	1	0.27	0					
Iron worker	1	0.27	0					
Machinist	1	0.27	0					
Plumber	1	0.27	1	100.00	0.27			
Printer	1	0.27	0					
Sign painter	1	0.27	1	100.00	0.27			
Tanner	1	0.27	0	0	0	1	100.00	0.27
Teacher	1	0.27	1	100.00	0.27			
Teamster	1	0.27	0					
Tobacco worker	1	0.27	0					
	377	100.05%				27		

Of the above, as might be expected, laborers form the majority (136), the next farm hands (97), textile workers (25), mill hands (25), mechanics (16), chauffeurs (16), the latter two being the same, probably, as most young men working in garages at the present day give their occupation as one or the other.

It is believed that many of the laborers and farm hands have also done textile and mill work, as many of these classes at present time frequently give a history of having worked in textile works, cotton mills, etc. Also men who are laborers are frequently laborers in textile works or cotton mills.

Although the number of men giving their occupation as textile workers or mill hands at the time of application for enlistment constitutes a small series, still the findings are higher for heart conditions than in any other class furnishing more than five rejections.

In conclusion I wish to call your attention to the fact that conditions have not improved in the last seven years despite the lessons learned during the war. The young boys of those days are now young men and in the class dealt with in this paper.

If you will permit me there are a few suggestions I would like to make, which are not at all new, but where put into effect have given excellent results.

They are. First, Factory inspection. Examine closely into the sanitary conditions, especially lighting, heating and ventilation, condition of the toilets, facilities for washing and personal cleanliness; and one of the most important measures, the elimination of employees with contagious diseases.

Second, Systematic physical inspections of school children, during which look for defects in teeth, condition of mouth, nasopharyngeal obstructions; take height, weight and chest measurements; look for faulty food habits and improper food; inquire into personal hygiene and home surroundings.

Third, Education, lay and medical in hygiene and sanitation, the avoidance of over fatigue, the proper amount of exercise, proper amusements; prevention of infection, all of which may be made more impressive by the use of moving picture films.

There is at the present time a nation-wide movement tending toward improvement in the health of children, which is attracting the attention of various welfare organizations and which has the hearty support of President Coolidge. In his indorsement of the movement the President has designated May first as Child Health Day. Celebrations are planned for that day in which the children will take part to interest and impress upon the parents the importance of this work.

OLD AGE

J. W. McNeill, M. D., Fayetteville

Scientific literature on the subject of "Old Age," is very scarce, and it is a condition that is difficult to discuss or describe.

I shall in this paper confine myself to some suggestions that may be of interest in regard to prolonging life, or to postponing

senility. I shall not try to describe the important part that the ductless glands play in the life of man or to offer any remedy for the building up or reviving them after decay sets in. Neither will I try to lay down any plans whereby the important organs such as the liver, the kidneys, the stomach, the heart, the pancreas and the brain may be restored to a normal condition after having been abused by unnecessary strain, but will confine myself to some practical suggestions as to how to live, to live long.

In many cases the scars that are made on the system in the younger days of life are hard to overcome. It is often too late to make a "come back", and when one begins to realize that the years are creeping on, and the full forces of the natural body are needed, and that all the broken parts of the machinery must be repaired to be able to live out a respectable life time. It is a crime to die before the age of 100. In many ways early in life the functions of the vital organs have been damaged. Rarely ever with overwork or burdens of heavy responsibility, but have over eaten, used stimulants as caffeine and sugar, slept in closed rooms breathing foul air, let months go by when the skin has never been thoroughly wet with prespiration, have failed to thoroughly chew the food, have neglected to drink sufficient quantity of water, have neglected the teeth, they take irregular meals, irregular sleep, irregular work and irregular play, and yet they can name no one cause, and no one day when the machinery began to fail and they passed from fit to unfit, some of them at 30 or 40 beginning to break down slowly and noiselessly, and many at 50 are beginning to show old age. It is hard to pass these into the stage of life as fit, when years begin to count and perfect functioning of the entire makeup is necessary to keep the vitality up to the needed standard.

After one has reached the time of life when years begin to count and it is expected that the vital forces will begin to fail, then it is that great care should be exercised in controlling and bringing to play all of the elements that are necessary in keeping up perfect functioning and co-ordination of the work of all the organs of the body. The mind has much to do with bringing one to the appearance of old age. It is foolish to adopt the bearing of an old man at 50 and expect and prepare to die at 60. "One is no older than he thinks he is." It is wise to form a habit of straightening up and lifting the body into an erect position when we see one whining and complaining, stooping and creeping around courting old age.

In our County Home a woman died a few months ago, that had been an inmate of that institution for 56 years, she had entered as an old woman; she was free from care with moderate fare; she did not worry about her fortune for she had none. The cook at this home remarked to the superintendent that the inmates were continually complaining but they never died, and their appetites were always good. If I were asked for the best life to live to reach the age of 100 years or more, I would say become a pauper and be received into the Cumberland County Home. Will also state that our convict camp is a health resort for young men.

By following closely hygienic rules, such as avoiding mental emotions and worries about things that may happen, have a complete hour of rest near the mid-day hour, sleep at night in a dark and quiet room with a window open, and not to sleep less than 7½ to 8 hours. Go to bed early and rise early, keep the body warm night and day, wear loose collars, and low shoes, live on a diet consisting of meat once a day, eggs, cereals, green vegetables, fruits and milk, masticate properly, learn to live in a cheerful mood looking on the bright side of things, never say die or give way to every gloomy feeling, but brace up against it and in a short while you will forget it; have something to do, something to live for, something to look forward to. If you take from old persons all hope of something ahead, as work or pleasure, as looking forward to meeting loved ones, they will give up and die, as there is nothing to live for. After following these hygienic rules and plans of living as suggested and then considering the fact that the brilliant discoveries of the last fifty years have given us an accurate knowledge regarding the cause, prevention and cure of one infectious disease after another. The steady reduction in the death rate from tuberculosis, typhoid fever, malaria and many other diseases is a glowing tribute to the wonderful discoveries and applied knowledge for the prevention and cure of disease. The average length of life is now 56 years as compared with 41 back in 1870.

In 1880 the bacillus typhosus was proven to be the cause of typhoid fever. A marked and steady reduction in that disease has occurred since this discovery.

There are some diseases such as influenza, measles and pneumonia against which we have no effective defence. Investigators are now attempting to solve these problems.

The death rate of the entire United States in 1880 was 19 per 1,000, in 1900, twenty years later, it was 17; the next twenty years makes a favorable showing by a reduction to 13. In 1921 the lowest rate yet reached by this or any other country except New Zealand was 11.

In New Zealand people live longest, averaging 60 years, while in India the lowest average age at death is below 25 years. The death rate among babies is enormous in India.

There has been a gain of 31 years in the average span of life since 1800. Knowledge of many communicable diseases is advanced to the point where we can feel reasonably assured of their control, and yet there will be required much educational work to reach the highest standard.

In 1920 there were 120,000 deaths from pneumonia, a rate of 137 per hundred thousand; tuberculosis 99,000, rate of 114; Brights disease and acute nephritis 78,000, rate of 89; cancer 72,000, rate of 83 per hundred thousand.

The expenditure of the Milbank Memorial Fund in an effort to stamp out many of the irregular causes of death should prove of great benefit in an educational way. Two million dollars are being spent in three communities, rural, city, and congested tenant. The American Public Health Association has dedicated itself to this

plan. Every community in the United States will have an opportunity to adopt the health regulations used, if the results are successful. Medical men can well afford to be proud of their achievement in extending the span of life in the past and if this experiment is successful it is hoped that 20 years will be added to the average span of life. To want to live long is as natural as for water to flow down hill, and if these things are done there should be no trouble in living to be 120.

SECTION ON EYE, EAR, NOSE AND THROAT

John W. MacConnell, M. D., *Chairman*, Davidson

H. L. Sloan, M. D., *Secretary*, Charlotte

CHAIRMAN'S ADDRESS

John Wilson MacConnell, M. D., Davidson

Your chairman wishes to substitute for a formal scientific paper, a short resumé of the "Present Status of Eye, Ear and Throat Work in North Carolina," hoping that some suggestions can be made for the improvement of our specialty.

There has been a marked increase in interest in the work of our department in the State Society, and this session sees the largest number assembled in the history of our section. This is because there is a natural increase in the number of men engaged in our specialty and because the programs have now become really worth while, and all of us find that we can get many points on our work just as important to us as we can in the special societies where the program is largely made up of rare conditions of interest only in a narrow way.

That there has been an improvement in the character of work done in eye, ear, nose and throat surgery and in refraction in this state none will deny who has practiced for the last decade in North Carolina. The older men have profited by their experience and the younger men are coming in better equipped. We are having fewer of the men taking up this specialty who have had only a few months' intensive training, and more who have had their full term of hospital work. Proper equipment for the modern practice of our specialty should consist of a year as intern on general surgery, and then an internship of two years on the special branches. Not to discourage any one who has not had such opportunity I would add that any man who has had five years' general practice, has had experience equivalent to a year in the hospital, and when he takes up a specialty he would do better to take a regular internship at a hospital than to content himself with a few months at a post-graduate school. The post-graduate courses are of more benefit when one has practiced his specialty for some years and then can choose the course in which he finds himself least proficient.

It is of great importance that the members of this section keep in close contact with general medicine and with the general work in the societies, for there is no such thing as an *absolute* specialty, but each branch of medicine or surgery is interdependent, just as no organ of the body can exist and function separate from its fellows. On this point I consider many members of our specialty deserve to be criticized, since frequently you find that they are unwilling to listen to papers on general subjects, or to attend any society proceedings unless limited to the field of their specialty. A study of cardio-vascular diseases is as necessary to the successful

practice of ophthalmology as it is to successful practice of general medicine. The speaker has seen grave errors committed by surgeons who had become so specialized in their field that they had forgotten their general diagnosis. Let no ophthalmologist say that his specialty is confined between the "eyebrow and the cheek," nor any otolaryngologist say that his work does not go below the neck, for if they do they will make many blunders in diagnosis and treatment.

The members of this section should attend the general meetings except when this section is in session, and there should be on the general program annually a paper on some phase of our work—a paper not too closely specialized, but one of interest to the general section. A good part of the program carried on by the State Board of Health is in the field covered by this specialty, and in addition to a paper before the general session on our specialty there should also be before our section a paper by some member of the State Board of Health or some pediatrician of note, since such a large part of our preventive work is with children.

If you consider the large number of people suffering from eyestrain which has not been diagnosed or properly corrected, and the large number with impaired hearing and suffering from infections of the nose, throat and accessory sinuses, you will agree that the field is not crowded, and that there is plenty of work for many good men before we have achieved our proper goal in the conservation of the natural physical resources of the people of this Old North State.

PREPARATION, TREATMENT AND AFTER TREATMENT OF TONSILS, TONSILLECTOMIES, WITH REPORT OF FIVE, SELECTED FROM 200 CASES

L. L. Simmons, M. D., Greensboro

SURGICAL AND CLINICAL ANATOMY

The tonsils are two oblong bodies situated in the recesses of the fauces, and we will consider the faucial tonsils only in this paper.

They vary in size in different individuals, but should not project beyond the anterior pillar of the fauces.

The internal surface of the tonsil is covered by the oral mucous membrane, and presents from ten to fifteen puncture-like orifices which lead to recesses called crypts.

The crypts are lined by extensions of oral mucous membrane.

The tonsils are compound follicular glands—i. e., they contain a number of lymphoid tissue masses similar to that of the solitary glands of the intestines.

They are enveloped in a fibrous capsule.

The secretion of the tonsil is derived from the mucous glands in the mucous membrane lining the crypts, and contains numerous epithelial and lymphoid cells.

Inspissation of the mucous secretion in the crypts of the hypertrophied tonsils gives rise to the formation of cheesy plugs, which contain decomposing epithelium, emit a foul odor, and produce a fetid breath.

It is quite probable that the stagnant secretion in the crypts of the tonsils enters the lymphatic vessels and causes many of the cases of inflammation and tuberculosis of the deep cervical chain of lymphatic glands.

BLOOD SUPPLY

Arteries. From the ascending pharyngeal branch of the external carotid, the tonsillar (which is a branch of the facial, and is the chief vessel of the tonsil) and ascending palatine branches of the facial artery, the dorsalis linguæ of the lingual artery, and the descending palatine branch of the internal maxillary artery.

Veins. The veins of the tonsils empty into the tonsillar plexus, which lies on the outer surface of the gland, and is drained by the pharyngeal veins.

Nerve Supply. The ninth or Glossopharyngeal, and branches of Meckel's ganglion.

Functions of the Tonsils. Produce lymphocytes, and some authors believe that the tonsil has an internal secretion comparable with that given off by the suprarenal glands, they having arrived at this conclusion after experimenting with the aqueous extract of the tonsil, intravenous injections of which gave the same results as those obtained from the injection of suprarenal extracts.

Causes for Operation. (a) Nasal catarrh. (b) Diseases of the ear. (c) Recurrent tonsillitis. (d) If it is thought that the tonsils drain into the deep glands of the neck. (e) When the tonsil crypts are filled with debris and bacteria. (f) Laryngitis with attacks of hoarseness. When the tonsils are hypertrophied they should be removed, any hypertrophied condition is evidence of disease and is cause for removal. (g) Chronic follicular tonsillitis is an indication for tonsillectomy, as there is little likelihood of curing it by simple methods. Even if the crypts are closed by the use of the cautery, the low vitality of the tissue predisposes to infection and inflammation. (h) Tuberculous infection often is first seen in the tonsils, and when so, they should be removed. (i) Recurrent articular rheumatism, and many other causes which the surgeon may find upon examination, which we shall not mention in this paper.

Preparation for Operation. Patients should be examined previous to the day of operation to see that all organs are functioning as nearly normally as it is possible for them to do; that the blood is normal as to count and coagulation in suspicious cases, so that anesthetics, either local or general, may be given in absolute safety; clearing the alimentary canal with purgatives twenty-four hours before operation, and allowing no solid food in the stomach for twelve hours before operation.

Give lactate calcium in 5 gr. doses to adults morning and night for three days previous to operation, and the same in 3 gr. doses to children in the same way.

We do local operations only with the adult, and give sulp. morphia, ¼ gr. hypodermatically one half hour before operation.

Anesthetics. General. Consist of ether, chloroform and A. C. E. mixture. I use ether in almost all cases, given by an assistant, in the recumbent position, and do not begin to operate until patient is thoroughly under the anesthetic. Local. There are many,—alypin, apothesin, cocain, holocain, butyn, stovain, tropococain, novocain. Adrenalin chl., can be used with all of them, when applied locally or hypodermatically. Some use quinine and urea in solution, claiming it to control post-operative hemorrhage.

I use the novocain E-tablet dissolved in 2½ c. c. distilled water combined with 5 gtts. adrenalin chl. With extended needle we insert the solution deep into the tonsil tissue, anteriorily and posteriorly, above and below the tonsil, doing four punctures, when the area will begin to bleach in from two to four minutes. Then you can remove same without pain or hemorrhage.

Operation. With general anesthesia we use Jennings or Greens mouthgag, Sorensen's suction outfit, Beck tonsil snare, Hurd retractor, and a Lynch forceps, in the recumbent position, and with some cases we use two Beck snares and do the Beck-Schenck operation. After the tonsils are out we clean the sockets by suction and swab one time with a solution of glycerine tannic and gallic acid.

With local cases the same technique is used, with sitting posture instead of recumbent position.

After Treatment. Patient should be kept in a quiet position for three to four hours after operation, then placed in a room where they can stay for three or four days if necessary; fed with liquid diet; using some mouth washes, but no gargles; keeping the bowels and kidneys acting as nearly normally as possible; give tonics when indicated, something like elix. phos. ferri, quinia and strych. drachm every six hours, or anything along the tonic line that might be indicated.

The greatest trouble we have is with the doctor who does general practice and everything along the line who tells his patients and all others that he can do the tonsil work as well as any specialist in the city, and gives them a cut rate price, and does it with a pair of curved scissors and a hemostat forcep. The results are sometimes fair, and again they are bad. We think the practitioner and all others should give this special work to the men who are prepared to do it, and the general results would be very much better.

Case 1. Mr. H. appeared for examination April 1, 1919. A young man, 22 years old, who had headache off and on for ten years and practically ever since he could recollect, and had rheumatism for five years, and had not been able to work for the last four years. Upon examination I found pulse 104, respiration 23, temperature 101, with a general run down physical condition, with loss in weight from normal, weighing 114 pounds. I found hypertrophied tonsils which almost filled the fauces, which were red and beefy, with follicles filled with a dirty debris, and pus-like appearance. I found astigmatism, which was corrected with a plus cylinder 1.50, axis 90, in both right and left eye. April 15, did a tonsillectomy complete. Patient had a rapid recovery, with no more head-

ache, and rheumatism disappeared within one month. He has been at work ever since, and weighed 163 pounds the last time I heard from him. Local anesthetic.

Case 2. Miss M., age 19, appeared for examination August 2, 1919, with difficult breathing. Very nervous, pulse 136, respiration 28, temperature 99, with enlarged thyroid gland and hypertrophied tonsils, the right being larger than a hen's egg. The left was almost the same size; had no evidence of pus in follicles, but was red and had a decided hemorrhagic appearance. I did a tonsillectomy August 10. She had a rapid recovery and four months later the enlargement of the thyroid gland had disappeared and so far has not returned. The condition of the patient recently appeared to be normal. Local anesthetic.

Case 3. Mr. G., age 18, appeared for examination November 3. Complained of being deaf in both ears, with general weakness and bleeding at times from the mouth, and loss of appetite. Found pulse 80, respiration 19, temperature 99, with an emaciation, weight 110. Tonsils very much hypertrophied, with filled follicles and fetid breath. He had an enlarged uvula. I did a tonsillectomy Nov. 10, and clipped the uvula. He had a capillary oozing for two hours, which was controlled by an application of gallic and tannic acid combined with glycerin. Patient had a speedy recovery and four months after the operation weighed 146 pounds.

Case 4. Misses B. Twin girls, age 17, appeared for examination May 1, 1922. Pulse 74 and 76, respiration 18 and 20, temperature 98 and 99, weight 123 and 128. Both had hypertrophied tonsils and enlarged thyroid gland. They both did very well until two or three days previous to menstruation when they would become nervous and have difficult breathing. It appeared that the thyroid gland would become enlarged, and the tonsils would enlarge at the same time, producing asthmatic symptoms during the menstrual period. I did a tonsillectomy May 15 on both of them, under general anesthesia, five days after menstruation. They both had a speedy recovery and have not had a bad symptom since the time of operation up to the present time.

Case 5. Mr. F., age 35, appeared for examination August 10, 1923. He gave a history of being treated by several regular practitioners, osteopaths and chiropractors, who pronounced him incurable, by being too late in coming to them for treatment. He then went to a dentist, who told him his trouble was due to pyorrhea and could be cured only by the extraction of all the teeth. This was done, but patient remained in the same condition. I asked him if the tonsils had been removed. He said no, so we proceeded to look at what was left of the man, and found imbedded tonsils with pus follicles. He said take them out, so we prepared patient for operation, and did same August 31, 1923. Patient had a nice recovery, has gained to 150 pounds, works every day, and has no trouble of any kind since the tonsil operation.

DISCUSSION

Dr. P. R. Hardee, Stem: Perhaps it is the height of presumption for me to undertake to discuss a paper prepared by a specialist for specialists, but, being a practitioner of medicine, I have had opportunity to observe closely some of the points which Dr. Simmons has brought out. For instance, I notice that one of the causes he gives for the removal of tonsils is simply hypertrophy—I suppose he means sim-

ple hypertrophy with no infection. I am forced to differ with him if that is the stand he takes. Up in my section of the country a large per cent of tonsils in children (after observation I am forced to put it at something like 60 per cent) are hypertrophied. A good many times you will find that condition in every child in the family, yet they are perfectly healthy and do just as well as if the tonsils were normal. I believe in removing these tonsils where there is infection, but if there is no infection, and if the hypertrophy is not enough to interfere with respiration, I doubt the wisdom of it.

Dr. Simmons brought out a point that was very interesting to me, inasmuch as I had seen something similar to it, that is the relation, it might be termed, of the diseased tonsil to hyperthyroidism. About three years ago I was treating a young lady for hyperthyroidism. It was not an exaggerated case, however. After treating her for some little time, I am sorry to say without any improvement, I happened to look at and examine her tonsils, finding one of them diseased. I recommended an operation, which was promptly done. The hyperthyroidism disappeared and has given no trouble since. In some cases there seems to be nothing that does more good than removal of the tonsils, for instance as in rheumatism. I have in mind the case of a young man who had never been strong. He did not develop. Mentally he was sprightly, but he was weak physically, and that went on until he was perhaps twenty years of age. It was found that both his tonsils were badly infected with pus—in fact, they were honeycombed with pus. He was under the normal physically, but after removal of the tonsils the young man grew strong, well and healthy.

Dr. C. N. Peeler, Charlotte: I enjoyed the Doctor's paper, and it is a subject in which we are all interested. We have all put more or less study on it and it is of a great deal of importance to the nose and throat man as to the after result, that is, when we get 100 per cent throat after tonsillectomies. We see a great many that are not complete, and that is what we are all striving for. The more careful we are the fewer failures we have.

Dr. Jos. B. Green, Asheville: I have just a few remarks in reference to the paper, which I enjoyed very much.

I shall first speak of the preparation of the patient. A very important thing is the preparation of the patient for the operation,—not the treatment of the tonsil itself or the attempt to disinfect, but the preparation of the patient for general anesthesia. I think it very important that sodium bicarbonate be given the night before and also the morning of the operation. The purgatives that have been used for so many years should, in my opinion, be dispensed with. I see no need of them.

In reference to post-operative care following tonsillectomies, I think that the less we do for the patient's throat, the better. They are too young to gargle their throats with salt solution, so the less we do for them the better off they are.

The Doctor spoke of tuberculosis of the tonsils. We have two distinct types of cases. One is the latent type, where we have no evidence of the tonsils being involved; and the other where there is evidence of ulceration of the tonsil. If there is active tuberculosis we usually leave the tonsil severely alone so far as removal is concerned. In the latent type, if we are sure of the diagnosis, it is advisable to remove the tonsil. The Doctor spoke of one thing that I think is very important, that is keeping the patient in the hospital for several days after operation. It seems to me, when we have so many tonsil operations, that we should frequently have a paper on the subject, and I enjoyed this paper very much.

Dr. T. B. Henderson, Goldsboro: There seems to be a question in the minds of the gentlemen close to me as to whether Drs. Peeler and Willis aren't stretching their blankets a little in saying that their patients eat three meals a day following an operation. (Laughter.) I have enjoyed this paper and it is a profitable subject to discuss. We cannot talk too much about tonsils, because, as Dr. Peeler just said, there is entirely too much bad work being done not only by general practitioners, but by specialists.

As to ligating, I thoroughly agree with Dr. Willis. I do not think it is necessary, except in rare instances. Pressure will usually control the bleeding.

To revert to the question of patients eating three meals the day following operation: For five years I have carried out a postoperative treatment that has been very successful, and I want to pass it along, for in talking to men from different parts of the state who do tonsil operations I find that very few know the peculiar action of this drug. I refer to the use of aspirin, which has a remarkable effect in diminishing the soreness and pain following tonsillectomy. I give it in five to ten grain doses, dissolved in about two drams of water, four times daily.

The first dose early in the morning—because that's the time when discomfort is greatest, at least thirty minutes before dinner and supper, then again at bedtime. If you men haven't used aspirin and you want some grateful patients, try it. Your patient will not only be more comfortable, but, what is more important, he will take more food, and, in the absence of hemorrhage, it is a deficiency of food that makes these patients sick. Patients who have had aspirin are those who can eat three meals the day following operation.

I use aspirin in another way that I should like to mention. Formerly I gave morphin to patients who were to have local tonsillectomies, as a routine, and many of them would be nauseated. Rarely do I use morphin at present. Fifteen minutes before the patient goes to the operating room ten grains of aspirin is given in the usual way. Two or three hours later, or when the throat gets painful, the dose is repeated.

Dr. O. C. Daniels, Oriental: Dr. Henderson seems to have given the credit to aspirin. I think it is due to the operation. I did the operation! (Laughter and applause.)

Seriously, though, I think that Dr. Henderson is right about the aspirin. I have tried it and I know that it does give them great relief. Acetanilide, in my opinion, will do the same thing, as will orthoform, and it is next to a crime to do a local operation and not follow it up with some of these drugs to relieve the patient of pain.

In Dr. Simmons' paper he mentions enlarged tonsils. In my opinion a large tonsil is a less serious thing than a small one. You probably haven't as much infection in a large tonsil as you have in a small one. As for infection of tonsils, I have not seen any way by which you could tell that the patient didn't have an infected tonsil. In my opinion it is something like a Wassermann,—if you get a positive, you can say positively it is syphilis. If you get pus you say they have an infection, but if you don't get pus that doesn't mean that they haven't an infected tonsil. I have tried this time and time again. The size of the tonsil wouldn't have anything to do with my taking it out. If the patient had any condition that could be caused by a focal infection and you couldn't prove it to be in some other place—it wouldn't take so much proof, either—I would take out the tonsil; I would take out the best looking tonsil I ever saw. In fact, I have done it and done it repeatedly. You cannot, by any method known to me, tell whether the tonsil is infected or not.

The Doctor mentioned the giving of chloroform. I did not get quite what he said, but I think most men have dropped chloroform in tonsil operations. Personally I have seen seven or eight cases of extreme collapse in giving chloroform. When my nurse gave my anesthetic I was bossing the job; she would give ether, and if there was chloroform given I gave it, but I made it a rule never to start on chloroform. If the patient got rough and wouldn't take ether well we would use chloroform; we used it in 300 or 400 cases and I never saw any trouble from chloroform used like that, but if you start with it first you do have trouble.

One doctor mentioned giving bicarbonate of soda. I never have done that, and have never seen any indication for it. I don't see why you should if you don't starve your patients, and if you do practically a bloodless operation. The only thing I can conceive of bicarbonate of soda being used for is to keep off acidosis, and if you don't starve or bleed them to death they won't have acidosis.

One doctor mentioned about tannic acid and glycerine. I have used two or three gallons and have never satisfied myself that it was of value.

As to the tying of the arteries, some say that that is an easy job. I can tie them pretty well, but if I pick up a piece of tissue the next time I look the tie is not there. The only way that I can get them to stick is to take a needle and go through above and below. They will stay, but I don't like that. Personally, I don't do that. If I have a bleeding that does not stop from pressure, I use the forceps. I sometimes send them out of the room with it on and take it off in a few minutes. I don't let the parents see that, for it is not good to look at.

Dr. A. M. Whisnant, Charlotte: The most gratifying thing to me about this morning's meeting is that you are opening up a discussion of this work. The subject that we are on is very important not only to the specialist but to the general practitioner. I am glad to hear the men give their views. We all meet our Waterloo sooner or later, whatever method we use. I find that catgut is the best hemostat in stopping tonsil hemorrhage. When you find a bleeder you want to tie it. I sleep better when I do that. We all leave pieces of tonsil, and are all sorry to see it when they come back later. We should weigh each case and try to make each one better. I find that if I examine all my cases for antrum and sinus trouble I sometimes find infections. We keep out of deep water in so doing.

Dr. John W. MacConnell, Chairman: As a general summary of the discussion, it would seem that when you bring up the question of tonsils in any group you will bring up argumentative discussion and each man will back his own method. The only thing that we are immediately concerned with is the *result*, by whatever method it is done. If the result is that the pillars are unhurt and there is no excessive scar tissue, no unusual pain or loss of time after the operation, it can be counted a success. Until we reach that point we still have something to do to perfect our work. If you are careful you will seldom have hemorrhages. You should test old cases of excessive pyorrhea. If you do not take a little care and make coagulation tests, some will bleed. I think that, generally speaking, tonsil surgery in the state is improving gradually and has been for the past sixteen or eighteen years. I examine a large number of college students every year and have had an opportunity to observe this, but, while I know that it is improving, it is not perfect. A man should adopt the method that gives him and the patient the best result and let the argument cease at that, because if you do it a little bit better than the other man and the patient suffers a little less afterwards he will tell somebody you did it and it didn't hurt afterwards, and all the rest will come to you.

Dr. Simmons, closing the discussion: I want to thank you gentlemen for arguing the subject so fully. I left it open for you to do so.

As to enlarged tonsils, I still stick to it that they should come out. As to tying off, I do not care what you do so that you stop the bleeding and do the work clean. This work should be done by the specialist—don't turn it over to the chiropractors.

OBSERVATIONS EYE AND THROAT CONDITIONS IN LEPROSY

W. P. Hardee, M. D., Durham

Strange as it may seem, the time-worn disease, leprosy, has manifestations and sequelæ which, up to the present, remain unobserved.

For obvious reasons (the loathsomeness of the disease), close contact with the patient makes leprosy a disease that one, for the

sake of details, hesitates to study. The name itself is repulsive. Perhaps it will be of interest to digress from the subject of this paper here and give a short outline of how lepers are segregated and cared for in "Culion," the leper colony of the Philippine Islands. Here the writer spent six months in studying the disease. Later observation was carried on in Sandakan, British North Borneo, where in addition to regular hospital work the writer was in charge of the leper colony during the years 1916 and 1920 respectively.

Culion bears the reputation of having the largest population of any leper colony among our possessions. During 1915 there were between 4500 and 5000 such individuals, consisting of Filipinos, Chinese, Moros, Malays, Mestizos, Spanish, one Englishman and one American. At stated times a government ship leaves Manila with the segregates from the city and surrounding adjoining provinces. A tour of the island is then begun, which consists in gathering from the capitals of each province the ones segregated by the provincial or county health officers. A physician of long experience is placed in charge, with assistants, for making the necessary examinations, including microscopic examination, before any such segregates are transferred to Culion. Upon arrival at Culion the segregates are vaccinated and placed in quarantine for a stated period to prevent infectious and contagious diseases entering the colony. This also gives time for housing arrangements to be made for the new inmates. It is an interesting sight to see them making their first acquaintances amongst the old colonists. Here one often sees families reunited, old friends met, and villagers greeting each other in their old familiar dialect or language, as the case may be. This is far happier than witnessing parents leaving children, home, and old surroundings, knowing that in all human probability they will never return. I was present on one occasion when a catholic priest, who had been working in the colony for some years, was pronounced a leper. His outstanding remark was: "Gracion a Dios" (Thank the Lord). He also added in Spanish: "Now I can finish the work appointed for me." The writer had the great pleasure of seeing some twenty-eight discharged from the colony back to their homes as cured. To a physician interested in the study of the disease a trip to Culion is not only pleasant but very instructive.

To return again to the subject of this paper: The cause of leprosy has been laid to the bacillus of leprosy, or Hansen's bacillus, which is an acid-fast organism belonging to the same group as the bacillus of tuberculosis and the other infective granulomata. The organism can be found in the secretions from the nose, from serum obtained by scarifying the nasal septum, or from ulcers of the septum. The routine procedure in the microscopical examination used is serum obtained from scarifying the septum. The organisms are obtainable from the nodules on the skin in the nodular type of the disease. In certain instances they have been observed in the peripheral blood stream, and in addition to the nasal secretions, the saliva, the urine and the milk have been found to contain the bacilli.

One can readily see how the eyes and upper respiratory tract so easily fall victims to the disease.

Concerning the initial lesion of leprosy. Gomez in 1923 says that "up to the present time we have very little knowledge of the initial stage of leprosy." We neither know how the infection is acquired, nor know whether leprosy, comformably to acquired syphilis, always begins with an initial infection. The cause of the lack of precise knowledge is that, even in countries where leprosy is frequently observed, the patients do not know when they became infected, and seek medical help only when the disease is far advanced. This is why we owe to chance nearly all that we know concerning the initial lesion. Bajon (1777) was the first to point out that a mere spot on the skin might be the starting point of the disease. Cluckin (1901), examining more than 200 lepers, found 3 who when first examined showed no other symptom than a cutaneous skin lesion. Such a skin lesion is a round, well defined, sharply raised infiltration which is usually pale pink in color or of a copperish tint; it is shiny, and in exceptional cases dark. The spot, which at first is hardly the size of a penny, gradually becomes as large as the hand. Similarly a mucous membrane, especially that of the nose, may be the seat of the initial lesion. This fact has been pointed out by Goldsmith (1891), Kobner (1896), and Sticker (1897).

There is a general impression among the medical profession in the Philippine Islands that the main entrance of leprosy is through the nose. Dr. Heiser, former chief of the Philippine Health Service, used to insist upon, and attach much importance to, the examination of the nasal septum.

Gomez says that in thousands of bacteriological examinations he found that, while leprosy bacilli in the majority of cases were found in the mucosa of the septum, this finding was not constant. However, when positive, there is revealed an immense number of the bacilli, while comparatively few of the bacilli are found in smears made from the skin lesions. This fact alone has led more or less to the acceptance of Sticker's theory, viz., that the primary lesion of leprosy occurs in the nose.

Gomez reports 2 cases in which he says undoubtedly the primary or initial lesion was in the nose. A further study of children in Culion, by the same workers, showed with a few exceptions the bacilli in the mucosa of the nose as a beginning sign of leprosy. The exceptions showed scarring of the mucosa, which was no doubt the beginning of the infection with leprosy.

The clinical classification has long been covered by two distinct types, viz: tuberculous and anesthetic, with a mixed type which shows clearly manifestations of both. In fact pure tubercular or anesthetic types are rarer than one would suppose. I have, however, seen the pure anesthetic type advanced to the stage where fingers had been lost, in which it was extremely difficult and sometimes impossible to demonstrate the bacilli in the nasal secretions. As the anesthetic type is characterized by local anesthetic areas, due to the trophic disturbances in the nerves which have been infiltrated by the bacilli and the toxins from the same, the subsequent trophoneurotic changes in the mucosa lead to ulceration. The tuberculous variety is distinguished by the formation in the submucosa

of local masses of granulations which undergo liquefaction, necrosis and ulceration. Such ulcers differ from the anesthetic type of ulcer, exhibiting a varying tendency to heal by cicatrization.

The leprous ulcer, without distinction as to type, is slow to heal, and in many instances much tissue is destroyed during the process. The cartilages of the septum and of the nose are often destroyed early in the disease, thus leaving the patient with a nose resembling that of an old syphilitic. The differential diagnosis in such a case would be the Wassermann reaction, positive in syphilis, and sometimes in leprosy, where the finding of the lepræ would positively diagnose leprosy. There is no reason why syphilis and leprosy cannot and do not co-exist, as do tupercolosis and leprosy, and as do syphilis and tuberculosis in this country.

Nose and Throat Manifestations. Epistaxis, as a result of congestion, occurs early in leprosy. It occurs later from the ulcerations, so that this is troublesome at times. Areas of anesthesia on the nasal mucosa are present, as are anesthetic spots on the soft palate and pharynx. Absorption of the uvula, with perforations in the soft palate, occur. I remember a case where the uvula was thickened, enlarged and edematous, due to a tubercle. Early voice changes I have noted. The voice sounds not unlike that of a chronic laryngitis from tuberculosis. Paralysis of the cords occur. Whether these are due to an actual paralysis *per se*, chronic congestions, infiltrations, leprous nodules or tubercles, or as the result of ulcerations of the arytenoids, the writer from actual observations is not able to say.

Dr. O. E. Denny, with whom I was associated in Culion and who is now in charge of the U. S. Marine Hospital No. 66 at Carville, La., where, as you know, our lepers are segregated, writes as follows: "Throat conditions in leprosy, as you will recall, consist mainly of leprous infiltrations and the formation of tubercles with subsequent ulceration, the ulceration being most probably from mechanical trauma. These ulcerations in the process of healing eventually cause contraction, thus producing stenosis. Surgical intervention in the form of intubation or tracheotomy is necessary. Tracheotomy is fairly common with us and we have one patient now who has been wearing a tracheotomy tube for over a year and is steadily gaining in health."

Occular Manifestations. These unfortunate individuals suffer from the usual diseases of the eyes with leprosy superimposed, or I might say predisposing or lowering the patients' resistance. DeSilver observed out of 500 lepers 401 with occular manifestations. Grossman says that all of the patients with the nodular form have such manifestations unless they die early. Such manifestations are seen as infiltration of the eyebrows, with thickening, loss of the eyebrows and lashes, infiltrations and thickening of the lids. It has been said by some observers that the loss of the outer half of the eyebrows is one of the earliest signs of leprosy. Conjunctivitis pterygia, infection of the lacrymal apparatus with abscess formation, is common. Corneal ulceration, with its many and varied complications leading even to panophthalmitis, is in my opinion the most

frequent cause of blindness. These ulcers are secondary to infections about the limbus. I am inclined to think that some of these ulcers are of a neuro-paralytic type. The slightest traumatism in these patients leads to ulceration.

As paralysis of the orbicularis and lids is common, the cornea is poorly protected. Thus we have ideal conditions present for trouble.

Ptosis and facial paralysis are common, which, when combined with ectropion, makes a picture once seen never forgotten.

DISCUSSION

Dr. MacConnell, Chairman: This is a most excellent paper. Dr. Hardee is to be congratulated on the paper and to be commended for going over there and working among lepers.

Dr. C. N. Peeler, Charlotte: We enjoyed the paper. I remember seeing six cases, and about the only lesions they had were about the eyes. One had already lost one eye. I don't know anything about this, but I want to thank the Doctor for presenting it.

The Chairman: I want to ask the Doctor, in speaking of the different types of leprosy, to tell how far they have progressed in the use of chaulmoogra oil.

Dr. H. L. Sloan, Charlotte: My experience in leprosy is confined to one case. In the Bellevue Hospital, six years ago, we were called over to see a new case in the eye, ear and nose clinic. When he told us what it was, we disappeared and were not able to observe it closely, but I know from literature about the eye complications with leprosy. I rise to congratulate Dr. Hardee for presenting this paper, for I feel that more of us are going to be thrown in contact with rare conditions; we are going to have not only Anglo-Saxons but people coming in from the outside, and we shall see more rare diseases. I want to thank Dr. Hardee for presenting the paper.

Dr. Hardee, closing the discussion: I thank you for your kind words. Leprosy is a rare disease and I hope it will always be so in this country.

Regarding the chaulmoogra oil treatment, I have observed it and watched it as best I could. While I was in the colony, they discharged twenty-eight patients back to their homes as cured, or, as they said, non-infectious. They had kept these people for three years in a building, isolated, and examined them microscopically, with negative results. Whether they came back after being discharged I don't know. On the whole, from what I gathered and saw, chaulmoogra oil treatment is encouraging. If it does not cure it holds the disease in abeyance and makes their lives more comfortable. One point, they have to be very careful in giving it to tuberculous people. Tuberculosis is very common along with leprosy, so this treatment has to be stopped in a lot of cases. I remember one case of an old fellow with tuberculous leprosy over the face. I wanted to see what potassium iodide would do, so I gave it for several months. The tubercles disappeared quickly but I had to discontinue the treatment for he could not stand it.

SOME COMPLICATIONS FOLLOWING OPERATION FOR ACUTE MASTOIDITIS

O. P. Schaub, M. D., Winston-Salem

In reporting the following cases of acute mastoiditis with their complications, I wish to present some of the symptoms occasionally seen in this type of cases, with some major and minor features which, if not exceptional, are at least very interesting. In order to avoid repetition, I will, when I can, state the history of cases jointly.

One patient, a boy four years old, was operated, January 31, 1923, another, a girl seven years of age, operated December 29, 1923. Both cases came under my care with a history of colds of two weeks' duration, followed by earache. Four or five days before I saw them, they had a paracentesis done. There was a profuse discharge from their ears, there was also a rather large swollen area back of the ear of each, extending downward into a Bezold abscess. Both children were operated as soon as practicable after entering hospital, the usual incision being made in both cases.

On retraction of periosteum the cortex was necrotic with an escape of pus under pressure. The wounds were cleansed of all diseased tissue, and packed with plain sterile vaseline gauze, a strip being carried to the bottom of the evacuated Bezold. Both of these patients ran a marked septic temperature from the time they entered the hospital.

All blood cultures in the boy were negative. In two cultures taken from the girl, as soon as she entered the hospital, one was positive for streptococcus, the other negative, two days later, another was reported positive. The temperature curves were truly septic, especially so in the boy; with daily variations of eight or nine degrees, until February 16 it reached 107°; five hours later it was 95; six hours later it was 107_6, a variation of 12_6 degrees. This curve continued for ten days, then it became normal, and remained so until the patient was discharged two weeks later, well.

In both patients the chest complications were about the same, continuing over a period of three weeks. Four days after each was operated the lungs became involved, commencing with numerous rales in one or both lungs, progressing rather rapidly until within 18 to 24 hours there would be a complete consolidation of a whole lung and part of lung on other side. This condition would then clear up, to be repeated eight or ten times in each case; at no time did I discover resolution taking place.

The girl's clinical history was extremely interesting. Having a streptococcus septicemia to deal with, and remembering fatal results in four previous cases, complicating acute mastoiditis, I wanted help and begged for it. On January 23 she was given intravenously 10 c. c. of a ¼% gentian violet solution, on the following day 25 c. c. same strength was given; two days later the latter dose was repeated. On the 30th, one week after the initial dose of gentian violet, 7 c. c. of a 1% solution of mercurochrome was given intravenously. Four days later the blood culture was negative for

streptococcus and continued so as shown by repeated examinations. Within twenty-four hours after the first injection of gentian violet the leukocyte count fell from 17,500 to 12,000. After negative report for streptococci the temperature remained septic.

On February 18 X-ray of chest showed a large round pneumothorax centrally located midway between the lungs, the heart displaced to left chest wall, and an effusion in right chest. This was aspirated, withdrawing 150 c. c. of thick green pus, which contained a pure pneumococcus. Aspirations were repeated one and two days later, each time followed by 60 to 70 c. c. of a ¼% gentian violet solution injected into the pleural cavity. A few days later, patient developed a bronchial fistula and expectorated several ounces of pus. Under local anesthesia, a rib resection was done, tube inserted and cavity drained for some time. X-ray picture of the hips and knees made at the same time the chest was done, showed in both knees, a swelling of the soft tissues and periosteal infiltration. Left hip showed some destruction of the head extending down to greater trochanter. Simple incision was made through fascia into large abscess, evacuating two ounces of pus, which contained pure staphylococcus. Both of these patients had a marked metastasis in the subcutaneous tissues over body and limbs, with only a few infarcts suppurating.

In each case there was extreme emaciation and profound exhaustion, neither being able to turn in bed without assistance. These patients were put on a high calory diet, with whiskey in form of eggnog and milk punch, the nurse being instructed to administer it until it could be detected on the breath. This was given during periods of extreme exhaustion, as was also strychnia, tr. digitalis and strophanthus. Fluids were forced to the point where the kidney output would equal 1,000 to 1,200 c .c. per day.

There was no reaction following the injection of gentian violet, but a rather marked one after the mercurochrome. There was a chill, sudden rise of temperature, followed by stains in excretions from bowels, kidneys and all mucous membranes; so much so that the nurse called, saying the patient was having a general hemorrhage.

On February 20 Mr. D., 19 years of age, called me to examine his ear. I found the history that of all ripe mastoids, pain in ear followed by rupture and discharge. There was a large swollen area above the back of the ear extending down into the muscles of neck. He was sent to hospital and operated under general procedure as carried out in the two former cases.

Under ether anesthesia the field was shaved about two inches back and above ear, scrubbed with soap and water, followed by alcohol, dried and painted with tr. iodine. An incision was made one-half inch above the back of ear extending well down over tip, the periosteum was retracted forward and backward and held in place by a fixed retractor, exposing the whole operating field. An initial opening was made directly into the mastoid antrum.

From this point the whole necrotic area was cleansed of diseased bone and tissue, working from initial opening in all directions until normal bone was reached.

In this case, as well as the two children, a rather large area of lateral sinus was uncovered, the wound was dried, a plain ½ in. selvedged gauze strip was inserted into cavity (no sutures were taken in either periosteum or skin flap), and outside gauze pads and bandage applied. For ten days this patient was dressed at hospital, then allowed to go home, to return to office every second day for a change of dressing. On the third day the patient complained of a slight headache; the wound was inspected and found in good condition, and the patient returned home. Twenty-four hours later I was called hurriedly to see him, found him unconscious; pulse 34 and very weak; respiration 8 to 10; pupils were dilated and responded feebly to light. Patient immediately sent to hospital. Fundus examination of both eyes showed marked congestion of each retina and swollen disc, arteries small and veins congested.

X-ray of head showed congestion and pressure of all cranial tissues. A spinal puncture was done immediately, removing about 2 or 3 ounces of clear fluid under considerable pressure. (The laboratory findings of fluid were negative.)

This patient was kept quiet in bed, ice cap applied to head and Murphy drip ordered. Within twenty-four hours patient was approaching normal, medication was discontinued. After two weeks' rest in bed he was allowed to go home and has had no further trouble.

As there were so many features in these cases outside the field of the aurist, I wish to acknowledge my appreciation of the services of Drs. Redfern, Lockett, Gray, Moore and Valk.

DISCUSSION

Dr. M. R. Gibson, Raleigh: I am very proud that we have a man who has reported a treatment that has not yet been reported. We should feel proud that we have men in this section who are so alert that they seize upon an opportunity to use worthy and tested remedial agencies. Gentian violet had not really reached the public or the doctors at the time that Dr. Schaub had this case, but having heard of Dr. Young's experience with this remedy, he got in touch with Dr. Young immediately. Dr. Young in reply told him to look at a certain article that had probably reached him. When he looked over his magazines he found this article had come in his mail that day, and he followed the instructions outlined in the article. I feel that we owe a great deal to the alertness of Dr. Schaub. The success that he has had deserves recognition, and he has been asked to report the results of his work to the men working on this treatment and who expect to continue this work. I know that all of us are glad to have some light on a new subject, and I wish to congratulate the Doctor on the success of the case that he reported. I think that was a wonderful treatment. He has been most successful, and it is due to his being prepared to do the proper thing.

Dr. C. N. Peeler, Charlotte: I enjoyed the Doctor's paper very much. I want to compliment him on the way that he handled these cases. It shows just what can be accomplished by careful, efficient, conscientious work.

I just want to add one more case on the list of general septicæmia. We had a case in the Charlotte Eye and Ear Hospital with the same history as that which the Doctor has given. The infection in the blood stream was streptococcus hemolyticus, from the ear. She was given three injections of gentian violet and five transfusions of blood in a period of days. After the second injection of gentian violet the blood stream became negative for infection. During this time, and following it, the patient had complained of her back hurting. A deep lumber abscess developed, which was drained. During the same time the patient complained of her foot. This became swollen, and finally an abscess pointed on the inner side of the os calcis. This was drained also, and the patient is gradually improving, the convalescence being slow. Apparently gentian violet offers a remedy that will count for a great deal. The article of Dr. Young's came out the day before this condition developed in this patient, and it worked fine.

Major W. F. Von Zelinski, Fort Bragg: While I was abroad, working in the hospitals in Paris on the eye, ear, nose and throat services, I saw two or three cases of this type in which they used colloidal silver intravenously with good results. I also read this article as to gentian violet in suspect conditions. Of course, in France they attribute the antiseptic value to the silver in the colloidal state, but that is very, very small, if you were to give 10 c. c. of that preparation. I doubt if there is as much as 1/100 of a grain in 10 c. c., and I saw the same striking results. After the injection there was a big drop in temperature. It may rise in ten to twenty-four hours and hit a high point again and then gradually recede. The question comes up in my mind whether this is a directly antiseptic effect, from the medicine itself, or a change in the physical state of the blood stream that enables it to take care of the infection. Their work in proteins is on much the same basis. They look on blood as a colloidal suspension of numerous elements which have been disturbed by infection, and they think if they inject something of a colloidal nature in it that it will make a physical change which will make an infection inocuous. It would be interesting if you could figure the relative amount of bacteria in a certain amount of blood or blood serum and apply your gentian violet or mercurial solution in the body accordingly and see the result.

This has been very interesting. I was impressed by the article by Dr. Young and recalled immediately the experience that I had over in France.

The Chairman: Dr. Schaub brings out, and he brought out in the beginning that there is no specialist who is absolutely limited in his field. Cases of acute mastoiditis bring out other troubles. I had, during my army service, a double mastoid in a patient at Camp Jackson.

This case had blood stream infection of streptococcus hemolyticus. I followed Dr. Schaub's plan of feeding him and he recovered. I gave anti-streptoccus serum intravenously.

Dr. Schaub, closing the discussion: I want to thank you for your remarks. I did not say anything about the results in this girl. She is yet in the hospital on account of her hip. I went over her since writing my paper last week. She is sleeping well and eating well, her chest has cleared up and the pneumothorax has entirely disappeared. There is a little thickening of the pleural wall on the right side and the heart is slightly enlarged. The red cell count the other day was 4,100,000; hemoglobin 80%. She is doing nicely and will, after a while, get her discharge from the hospital.

RETROGRADE DILATATION OF ESOPHAGEAL STRICTURES

J. G. Murphy, M. D., Wilmington

The esophagus, a muscular canal about nine inches long, extending from the pharynx above to the stomach below, resting behind on the vertebral column, attached in front loosely by muscular bands to the more resilient cartilaginous tube—the trachea—and bounded on either side by the mediastinal cavities, is one organ in the human body on which direct surgery is difficult, in fact almost impossible in certain areas. It is to strictures or contractures of the esophagus that I wish to call your attention. Men in general practice can testify to the frequency of this condition, and certainly one in whose specialty falls esophagoscopy knows that these cases are more common. Granting that we have them, and that we have to treat them, the question is treating them the way that produces the safest and quickest recovery. The old method of passing bougies blindly down, and making sufficient pressure to get the required results, is so fraught with danger and gives fatal results so often that new and modern medicine and surgery must look for a better method of treatment.

Certainly if there is one man in America who stands out preeminently in a specialty it is Chevalier Jackson. in the field of bronchoscopy and esophagoscopy. From time to time during the last several years I have had the privilege, after taking post-graduate work under him, of visiting his clinic, and it is from teaching received at this source that I am able to come before you with the cases I have to report. These cases, each, have esophageal strictures as a result of swallowing caustic lye. The June 3, 1923, Journal of the American Medical Association carries an article by Dr. Clerf, the assistant to Dr. Jackson, on "Cicatricial Stenosis of the Esophagus Caused by Commercial Lye Preparations," in which he reported 18 cases. In this issue of the Journal you will find the picture of one of my patients, who was afterward treated by me. The method I shall show to you is the same that is carried out in the bronchoscopic clinic at the Jefferson Hospital in Philadelphia. Quoting Dr. Jackson: "Spontaneous recovery from cicatricial stenosis probably never occurs, and the mortality of untreated small

lumen strictures is very high. Blind methods of dilation are almost certain to result in death from perforation of the esophageal wall, because some pressure is necessary to dilate a stricture, and the point of the bougie, not being under guidance of the eye, is certain at some time or other to be engaged in a pocket, instead of in the stricture. Pressure then results in perforation of the bottom of the pocket. Blind bouginage should be discarded as an obsolete and very dangerous procedure. If the stenosis be so great as to interfere with the ingestion of the required amount of liquids, gastrostomy should be done at once and esophagoscopic treatment postponed until water hunger has been relieved. Gastrostomy aids in the treatment by putting the esophagus at rest, and by affording the means of maintaining a high degree of nutrition unhampered by the variability or efficiency of the swallowing function." The method followed in the clinic is to do a high gastrostomy and feed the patient through a catheter inserted through this wound. After the esophagus has been put at rest the patient swallows a silk thread. When this has reached the stomach it is picked up with a pillar retractor and the circuit is made complete from the esophagus and stomach with the two external ends tied together. To pass the dilator, the external string is cut, and to the lower end is attached a new string a few inches above the cut end, and to the cut end is attached the Jackson-Tucker dilator. This is pulled up through the gastrostomy wound into the stomach and through the esophagus, thus dilating it from below up. This is the safest of all the blind methods, and is the one now in practice at the bronchoscopic clinic at the Jefferson Hospital.

Following is the history of one of my cases who is here today and will in a few minutes receive his weekly treatment in your presence.

Name: Clyde Allen Brown (Father: Ned), Pink Hill, N. C., R. F. D. No. 2. Age: 3 years.

Weight when first seen, 18 pounds, 7 ounces. The case was referred to me by Dr. J. B. Sidbury, of Wilmington, and was seen in his office in consultation with him. Complaint: Inability to swallow and retain food for four weeks, and for the last 12 hours inability to swallow any water at all.

Six weeks before, his mother was using lye for scouring the kitchen and had some in a glass which was left on the kitchen table, and Clyde, thinking he was swallowing milk, took some of the lye.

Two weeks after this he began to vomit up his food. What he would eat one day he would vomit up the next, and after a few weeks of this he began to vomit everything that he swallowed. After remaining down for a shorter or longer time it would come back.

Patient was *extremely* emaciated. He looked like one of the Near East starvation children. He had lost weight till his little limbs were nothing but skin and bones, with the abdominal walls shrunken, with the skin lying in folds, with an anxious, pitiable expression of the face, quickened pulse and respiration. He was sent to the James Walker Hospital and fluids were injected into the peritoneal cavity, subcutaneously and also the veins, in order to correct the dehydration. It is well to note that no surgery of any kind should be done while the

patient is in this condition of dehydration. After nourishing him in this way for two days, and a blood transfusion of 400 c. c. from his father, a gastrostomy was done by Dr. T. M. Green of Wilmington, a rubber catheter passed in through the opening, and nourishment was given direct into the stomach through this route. Water was given through the tube, also, allowing the inflamed, strictured esophagus to have absolute rest. Two days later, September 5, he was allowed to have a small amount of water by the mouth to assuage thirst, and this was usually retained, though occasionally vomited. Patient had a rather slow convalescence, and did not begin to swallow milk and ice cream and retain it for about ten days. He gained strength and weight rather slowly, and it was October 9th before we succeeded in getting him to swallow the string. With a pillar retractor this was pulled out through the gastrostomy wound and the circuit made complete, and patient left hospital on October 11, 1923. Since October he has been dilated once each week by the retrograde method and we have gotten him up to a No. 18 Tucker dilator.

As you can see, he is well nourished now and growing as a boy should at his age.

We have two other cases, near the age of this one, that are being treated in this way, and one we have ceased to dilate and are allowing the gastrostomy to heal.

DISCUSSION

Dr. John R. Lowery, Raleigh: I am not a nose and throat specialist but a stomach man. When we get strictures of the esophagus we treat them from above and not through the stomach. I take a silk thread and have them swallow it, 18 feet, so it will go down in the intestines and you can put traction on it without pulling it out, then thread a piano wire with an eye in the end on this silk thread, pushing it down through the stricture into the stomach. The thread, being pulled tight, guides the wire through the stricture without injuring the tissues by punching into the walls of the esophagus. Then I take bougies with holes through them and thread them onto this wire and push them down into the stomach, pulling them back with the piano wire, the eye on the wire preventing them from coming off.

Dr. S. E. Koonce, Wilmington: Dr. Murphy and I have occupied adjoining offices for ten years or more, and all these patients that I have not seen, I have heard. In the winter of 1907-1908 I was taking special work in New York. At that time Dr. Jackson was in Pittsburgh, not connected with any college, and doing what you might call legitimate advertising, going to different colleges over the United States and demonstrating his methods. He happened to be showing his work at the post-graduate in New York, while I was attending a class under Dr. Beamah Douglas. I went over where he was lecturing a bunch of professors. I don't usually butt in—I don't like to get on the front seat—but I butted in then because I was interested. After that, I bought Jackson's outfit and found that one average man can do anything another average man can do if he has properly prepared himself. Dr. Murphy is now doing more of that work than I am, but still I have had some little experience.

Before I entered special work, I had one case of esophageal stricture from carbolic acid and did a gastrostomy, but the patient died of carbolic acid poisoning in two days. What I would have done if he had lived, the Lord knows.

I had a case of concentrated lye poisoning two years ago. The patient was a postoffice employee, 28 years of age, and if Dr. Murphy had remembered that, he would not have said that they all die if treated by the direct method. He was two years old when he swallowed the concentrated lye and had never since swallowed anything larger than a tomato seed.

With the esophagoscope I found a firm purse string through which only the smallest probe could be passed. I used a set of hard rubber sounds 1½ MM up to the largest size. It required about three weeks to pass the smallest. In eight months he himself was able to pass the largest. In passing one of the sounds the patient was rather badly shocked, and I was afraid that I had ruptured the esophageal wall, but it proved to be all right.

The heavy metallic sounds are too dangerous for this work, as you lose the sense of touch.

Dr. D. H. Nisbet, Charlotte: I know nothing about the treatment of esophageal stricture from experience, but I am interested in it from the viewpoint of gastro-intestinal work. I recently heard Dr. Porter Vinson, of the Mayo Clinic, in a lecture on this subject. He has the patient swallow a silk thread down to 4 or 5 feet, making sure that it has passed into the intestine by pulling on it. With the string as a guide he passes a whalebone guide, on which a perforated olive of steel is attached. By pulling the thread taut it is impossible for the olive to pass into the diverticulum which is often present above the stricture. I would like to know what size thread Dr. Murphy uses. The retrograde method of treatment is a new one to me, but it certainly is a good method as illustrated by his case here.

Dr. C. N. Peeler, Charlotte: I have enjoyed the Doctor's paper very much, and greatly appreciate the presentation of this interesting case. This case illustrates what can be done by means of retrograde dilatation of esophageal strictures.

I have had the pleasure of seeing a number of these cases in Dr. Jackson's clinic. The lives of children can be saved; not only can the lives be saved, but the esophagus can be restored to a good functioning condition.

I had the pleasure of talking to Dr. Porter Vinson, a North Carolinian from Davidson College, who is now with the Mayo Clinic. He does a great deal of work along this line. He does not do the retrograde dilatation, but, as Dr. Murphy describes, is getting excellent results.

Dr. James M. Lilly, Fayetteville: I have no cases of this kind treated by the retrograde method to report, as I have never attempted this method of treatment. However, early in my career I had several cases of esophageal stricture referred to me, I think because the general surgeon did not want them, and it was up to me to try. I have con-

tinued to have a few of these cases from year to year and have treated them by the old method of dilatation with the various forms of bougies passed through the mouth. So far as I know only one case died under my treatment. Whether or not I made a false passage or whether the patient died from taking too much food at once I do not know. I do know that of the fifteen or twenty cases which have been treated by the old method all but this one did well as long as the dilatations were continued.

In one case I had the patient attempt to swallow a string with small shot tied to the end of it and then had radiograph made and thus located the stricture. Then, with the aid of a general surgeon, a gastrostomy was done and dilatation done by the retrograde method, complete dilatation being done at the one time, the gastrostomy wound closed, and the treatment continued by the old method.

I am glad to have heard this paper and to have seen the method demonstrated.

Dr. John R. Lowery, Raleigh: I want to make a remark as to the web and nervous spasm. I use a hydraulic dilator that is like a stomach tube, except that the lower 6 inches is soft elastic rubber. I connect this with the city water spigot and turn on the water pressure, which causes the lower six inches of soft rubber to dilate and stretch the contracted muscle at the lower end of the esophagus, curing the spasm. There is a guage attached to this tube so you can tell how much pressure you have.

The Chairman: The subject of Dr. Murphy's paper is retrograde dilatation. There are two schools as to the dilatation of esophageal stricture; the Jackson school, by the retrograde method and by inspection, and the Mayo school, Plummer and Vinson. The latter have the patient pass the string through the stricture and you can pull and pass the bougies down the string as a guide. We know that both of the men are achieving great success, and that Jackson is almost a wizard. Dr. Jackson will tell you he can pass bougies as easily as putting a pencil in his pocket, and he said that there are a number of men in this state and South Carolina who are doing excellent work in esophageal stricture We should have one man in each state who will perfect himself in this work and try to refer our work to him, so that he can have enough to give his time to perfecting himself in his technic. You will agree with me also that the majority of our non-paying cases are usually the unfortunate people meeting with these accidents. I think our Section should do all it can to have people protected against swallowing lye, etc., so as to have as few of these strictures as possible.

Dr. John B. Wright, Raleigh: I enjoyed very much the demonstration and paper. Speaking of the retrograde method, there are a number of cases brought to us where the child is in extremis and where an opening into the stomach is an absolute necessity because the esophagus is closed and sounding is dangerous. It seems to me that there is no method that is successful and safe and so quick as the method that

is now being practiced in Jackson's Clinic, in extreme cases where it is impossible to pass even the long whalebone bougies. There are cases in which you can do that, and in those cases I think this method is the only safe one to follow. If you see a case before the stricture is formed and still think Jackson's method should be used, then you should pass the filiform bougies and gradually dilate up. You can do that very easily and save discomfort.

Dr. Murphy, closing the discussion: If I left the impression that I have entirely discarded the old method in doing this work, I went too far in advocating retrograde dilatation. I have a lye case under treatment at the present time in which I have done the gastrostomy. My subject was retrograde dilatation, and not dilatation of the esophagus.

All the cases except the patient I saw today were received in condition to allow the direct esophageal dilatation, and it was only after consideration and decision that it had to be done by the retrograde method that we started the dilatation in this way. I am dilating some from above now with whalebone bougies, but the case we treated before this one which we treated today we could not get anything in. It was referred to me by Dr. Greene of Wilmington. He failed and so did I. I saw one of the cases in which there was so much esophagitis that I think the esophageal examination would have caused trauma, and would have produced a greater scar and more trouble, so we did the gastrostomy. I have not discarded the old method. However, Dr. Jackson states that blind pressure sometimes produces so much trauma that they will die in twenty-four hours. It is a dangerous thing, and I know other surgeons who have had very unsatisfactory results. In taking X-ray pictures you see how easy it is to go in the pocket, and how dangerous it is to make that pressure. I am following Jackson's instructions in that, and I was quoting Jackson when I said that spontaneous recovery never occurred.

The method of Dr. Porter Vinson, of passing the whalebone bougies, is a good one. I am glad that was brought out by Dr. Nisbet and I am going to see if I can do it. We don't want to do gastrostomy if we can help it. I saw as many dilatations by the old method as by the retrograde method, and they have not discarded it at Jackson's Clinic at all. I was just trying to bring before you the retrograde method.

I thank you for your liberal discussion.

The Chairman: I hope that some day we can have Dr. Porter Vinson and Dr. Jackson with us. I am sure that Dr. Porter Vinson would be glad to come, this being his native state.

THE MOSHER-TOTI OPERATION ON THE LACRYMAL SAC (COMBINED INTRANASAL AND EXTERNAL OPERATION)

HARRY C. WILLIS, M. D., WILSON

My purpose in presenting this subject is to show you the post-operative results obtained after eleven weeks' duration, and to advocate the Mosher-Toti combined intranasal and external operation on the lacrymal sac instead of the extirpation method, since the latter does not restore a physiologic function and allow the tears to drain in the nose as they should, but the Mosher-Toti does.

My knowledge is gained from some three years' work in Dr. Mosher's laboratory, and also from having him as my chief in the Massachusetts Charitable Eye and Ear infirmary for two years. It was my privilege and pleasure to assist him in a great deal of this work, and likewise my honor to have him assist me in two cases.

What I have to say is taken almost entirely from Dr. Mosher's works, and the steps of the operation are taken from his reprints, using his own descriptions, etc., and giving him credit for every feature. I have nothing to offer other than the three cases done by me of recent date, and wish to give him due apologies should I fail to quote him correctly.

I do not think one can do surgery or should attempt surgery until he knows his anatomy, and for that reason I shall give you the applied anatomy for this particular operation.

The posterior half of the bed of the sac is made by the thin lacrimal bone; the anterior half by the stout posterior edge of the ascending process of the superior maxilla. It is much easier to enter the nose through the posterior half of the bed of the sac, one of the anterior ethmoidal cells, the lacrimal or the unciform cell, overlapping a part of the bed of the sac. This cell varies greatly in size. In series with the lacrimal cell and in front of it a second anterior ethmoidal cell, the agger nasi,—is often found. This overlies the inner surface of the ascending process of the superior maxilla over the prominence of this process called the agger nasi. In entering the nose from the orbit, by way of the bed of the sac, one or both of the ethmoidal cells just mentioned must be opened. In approaching the sac intranasally the same cells are encountered.

Owing to the thickness of the ascending process of the maxilla in front of the sac the intranasal approach to the sac is around a corner or through the thickest part of the ascending process. The tip of the middle turbinate overlies the unciform cell and a part or the whole of the agger nasi cell when this is present. In order, therefore, to get a free opening into the nose opposite the lacrimal sac it is necessary to remove the tip of the middle turbinate and the lacrimal and agger nasi cells. The inner bony wall of the nasal duct has the same two components as the bed of the sac.

THE COMBINED OPERATION

Intranasal Procedures

After packing the nares with adrenalin strips, which is done just before the patient is brought to the operating room, and al-

lowed to remain for about ten minutes, the patient is placed in a chair in the vertical position. The post-nasal plug is put in place and anchored on the opposite cheek with adhesive tape. Then the adrenalin packing is removed from the nose, and the condition of the septum is noted carefully. If you have a deflection to the side on which you are to operate, it is best to do a submucous resection at the time of doing the other nose work (however, you may do all of this a week or so previous to the work on the sac) of taking off the tip of the middle turbinate and curetting the anterior ethmoid cells. In all of this nose work it is most essential to prevent any more traumatization to the mucous membranes of the nose than is possible to avoid. This work being done, a small strip of gauze lubricated with vaseline is left in the nose temporarily, or until the external opening through the bone is made..

External Procedure. The face on this side, or the field of operation, is prepared in this manner: First, boric ointment is put in the eye; face lightly scrubbed with soap and water, and then the field is gone over with a weak solution of iodine, removed with alcohol; the patient draped. The assistant is to your right, anticipating your every move and placing the instrument in your hands, without your removing your eye from the field of operation, and at all times keeping your field dry, using small cotton balls.

The bleeding from the subcutaneous tissue is rather free as a rule, and to control this metal clips are used instead of a self-retaining retractor, as the latter is in the way.

First Step. The incision is half way between the inner canthus and the edge of the bridge of the nose. It begins on a level with the summit of the globe and is carried in a nearly straight line a centimeter and a half or two centimeters long, and to the bone the length of the entire incision. With a flat chisel the subcutaneous tissue, internal palpebral ligament and periosteum are separated from the ascending process of the superior maxilla. The subcutaneous tissue and periosteum over the nasal bone are undisturbed. At this stage the sac is exposed.

Second Step. The sac is turned out of its bed by entering the orbit above the sac and working downward and backward. The elevation of the periosteum from the inner wall of the orbit is carried a little beyond the crest of the lacrimal bone.

This allows the sac to be turned well outward. Inferiorly the beginning of the nasal duct should be exposed and the surface of the ascending process of the superior maxilla opposite the beginning of the duct.

Third Step. Making the nasal opening. This is done by making an opening into the nose opposite the lacrimal sac, the size of the sac. The opening is made with a citelli punch through the posterior part of the bed of the sac, because the posterior half of the bed is made by the thin lacrimal bone. The opening is now enlarged upward to the top of the bed of the sac, and backward to the crest of the lacrimal bone. Anteriorly a little of the posterior edge of the ascending process of the superior maxilla is bitten away. Usually the citelli punch is not strong enough to cut the

ascending process of the superior maxilla, and the large Kerrios punch has to be resorted to. In making the opening into the nose the nasal mucous membrane is trimmed flush with the bone opening. The anterior end of the middle turbinate is removed to the posterior rim of the opening, and any anterior ethmoidal cells which may overlap the nasal opening are similarly dealt with. In removing or trimming the anterior end of the middle turbinate, the conchotome or ring punch can be introduced upwards through the nose and watched through the nasal opening or introduced directly into the nasal opening.

The Fourth Step. The fourth step consists in removing the inner half of the sac, and this is best accomplished by making a perpendicular incision along the full length of the anterior edge of the sac. From the top of this incision, and making a right angle with it, a second incision is carried horizontally backward across the summit of the sac. These incisions can be made with knife or scissors. The two incisions allow the inner wall of the sac to be turned inward and backward as a single flap. If the two walls of the sac are adherent, a probe passed through the canaliculus into the sac is helpful in starting the incision.

Fifth Step. This consists in the removal of the inner bony wall of the nasal duct down to the edge of the inferior turbinate, is best accomplished by straddling the inner wall of the duct with a small conchotome and biting downward. This takes away all of the inner wall of the duct but a small spur, which is the anterior portion of the inner wall of the duct projecting backward from the posterior surface of the ascending process of the superior maxilla, and the spur is removed by downward strokes of a chisel.

With this done the membranous duct is widely exposed, and the inner wall of the membranous duct is now removed with scissors or conchotome.

Sixth Step. This is the stage where we close the wound. If there has been much bleeding from the ethmoidal region, the upper part of the nose is lightly packed with a strip of gauze liberally smeared with sterile vaseline, to remain from six to twelve hours; otherwise no packing is left in the nose. Before closing the incision, the anterior edge or outer wall of the sac is sutured to the cut edge of the periosteum over the nasal bone, using two sutures of small plain catgut. This is done on the theory that it supports the subcutaneous tissue, prevents sagging, and gives a better scar. The skin incision is closed with silk, making the best coaptation possible; boric ointment is put over the wound, and a pad of cotton, with a light pressure bandage, for twenty-four hours, after which this is removed. Should there be any edema, the lower angle of the wound is slightly opened and warm boric applications are put on every three hours for from twenty-four to forty-eight hours, and it subsides without any trouble.

The average case will be ready to leave the hospital in from five to seven days, after which the patient is to return for observation once a week for three weeks and then once every three weeks

for a few months, to note the nose condition and the condition of the punctum. If probing is found necessary, there is no objection. However, this is seldom necessary.

The following points are the ones which Dr. Mosher wishes with every case:

Duration of epiphora, and frequency. Has sac ever discharged pus? Has probing been done? Is there any evidence of tuberculosis or syphilis? Has there been previous operation on the sac? Is there any evidence of fistula? Condition of the punctum? Condition of the nose? X-ray of the sinuses.

I will now read from Dr. Mosher's reprints, quoting a little better than seventy-five per cent of cures of epiphora, and ninety per cent cure of pus, on about seventy cases.

Now as to the three cases done by me during the past five months:

All three cases had pus. One had given a history of three abscesses, with a fistula at the time of operation. The case with the abscess has been cured of the pus, so far, and has from two to three drops of tearing daily; prior to the operation tearing was constant.

The case done eleven weeks ago is a perfect cure so far, with nose clean, no scabbing or crusting in the nose; wound healed with the faintest sort of scar, which is barely perceptible. I think in three months more the remaining scar will have entirely disappeared. The other case was relieved of pus immediately, or I have not been able to find any since; the tearing ceased after the fourteenth day, and she has a clean nose and fine results.

I believe it most essential in all of these cases to eliminate all reasonable doubt of any sinus trouble, and to put the nose in the best condition possible.

The last case reported had at the time some rhinitis, and after doing a submucous resection (which was badly needed) I equalized the breathing space in the nares. I am satisfied that, with this condition greatly improved and nose clean, she need have no fear of there being any further trouble about the tear sac.

I must admit that I have observed only a few cases of extirpation of the sac, possibly not more than eight or ten in all, but I have yet to find one that did not show some epiphora, and in this connection I wish to quote the figures of Dr. Gilbert of the Massachusetts Charitable Eye and Ear Infirmary. In fifty per cent of the cases so operated, by the extirpation method, the eye remains disabled by persistent epiphora.

The extirpation method does not appear logical to me; the Mosher-Toti method is physiological.

I do not claim everything for the Mosher-Toti operation, but I do feel and believe that a very large majority of the cases will do well, and that it is a far superior method to the extirpation method. I am very much gratified with the results obtained in my experience, which of course is limited.

DISCUSSION

Major W. F. Von Zelinski, Fort Bragg: I am very glad indeed to have heard this paper. I tried this operation three times and was

not satisfied with the result. Perhaps it was my technic. I found that the opening in the nose closed up, and decided in the next case that I would make it larger and made an opening that would admit my little finger. The trouble we had with that was crusting that kept up and kept up. The third case was about the same thing. That crusting was very bothersome to the patients. Three operations are not much to go by. The method I used previously was extirpation of the sac and inferior portion of the lacrimal gland, which was satisfactory. I hope there will be a good discussion of this particular operation. It looks very reasonable, although somewhat formidable, and I would like to hear what experience the other gentlemen have had. I hope to try it again when I have a little more information concerning it.

Dr. Willis, closing the discussion: In the first instance, in regard to the Major's three cases that he failed on, there is the all important point, the nose work. If you do not get that opening large enough, or if you have any evidence of sinus trouble at all, you will have scabbing and crusting. If you leave any tags or rough places where you go through the lacrymal point you will make for scar tissue. Most men in doing it, when they follow Dr. Mosher's technic, don't make the opening large enough. That is one thing that he lays stress on, making the opening large enough so that it won't collect anything and retain it.

Another thing in connection with the three cases of the Major's is this: it would be rather a strange coincidence for him to have gotten three cases that would naturally fail anyway; nevertheless I rather think that he in all probability erred on his nose work and did not get the opening large enough. The operation, as I said, does not claim to be one hundred per cent successful. If you get seventy-five per cent of them with good results you are doing pretty well, regardless of what the operation is.

ACUTE EXUDATIVE MIDDLE-EAR CATARRH

Milton R. Gibson, M. D., Raleigh

Middle-ear diseases are commonly divided into those in the development of which bacteria play no part, and those which are bacterial in origin. Those coming under the first classification are termed *catarrhal*, and those of the second division are designated as *inflammatory*. The causal factor in the catarrhal group is the mechanical action of pressure produced by occlusion of the eustachian tube; in the inflammatory group it is, of course, the bacterial invasion. Affections classified under either group may be acute, subacute, or chronic, and in general it may be said that without proper attention the acute or sub-acute forms of any of these otologic affections will practically always tend to become chronic, despite the fact that a very general opinion prevails that slight "ear trouble" is a matter of small importance.

The pathological changes of acute middle ear catarrh are, according to Phillips, largely confined to the pharyngeal portions of the eustachian tube; the actual middle-ear structures and their enclosed

spaces being little altered. The mucous membrane of the tube becomes reddened and swollen, and the lumen of the tube is much narrowed or entirely closed. This stoppage of the eustachian tube results in a retraction of the tympanic membrane at the opposite end of the passage. According to the teachings of Boeninghaus the mucous membrane of the middle-ear has the property of absorbing the air which the middle-ear spaces should normally contain. With the lumen of the tube closed by catarrhal swelling, this faculty of air-absorption causes a negative pressure in the middle-ear spaces, and in an effort at compensation the drum is forced inward in the direction of the promontory by pneumatic pressure in the external auditory canal.

The deafness, which is one of the most characteristic features of aural catarrh, results from the blocking of the eustachian tube and the shutting-off of the middle-ear from the pharynx. The retraction of the drum membrane serves to crowd back the ossicles, and deafness, tinnitus, and the frequently complained of "full feeling in the ear" ensue. Vertigo may even occur, but this is decidedly uncommon. The partial immobilization of the ossicle chain, and the disturbance of the normal relationships which the members of that chain bear to one another, are also partly responsible for these symptoms. Dan MacKenzie mentions that there may be some direct interference with the activity of the labyrinth produced by the increased pressure of the foot-plate of the stapes in the oval window.

In the exudative form of middle-ear catarrh, the exudation is most frequently caused by the inflammatory process in the mucous membrane. Nevertheless, we are told by Politzer that excessive swelling of the tubal mucous membrane and impermeability of the eustachian tube will, in consequence of the rarefaction of the air in the tympanum, cause a transudation of serous fluid which is free from bacteria. The process of air absorption draws the drum inward, as we have already seen; this process continues until the elasticity of the tympanic membrane has reached its limit. The tendency to vacuum formation will bring about a hyperemia of the mucous membrane, from which the transudate finally flows into the tympanic cavity.

In the sero-mucous catarrhs the affection extends for the most part over the surface of the middle-ear. Politzer warns us, however, not to lose sight of the fact that, in recent catarrhs which extend from the naso-pharynx, the swelling and hypersecretion may be limited to the lower portion of the eustachian tube, without extending into the tympanic cavity. These are the cases of intumescence of the pharyngeal orifice of the tube, which are associated with hypersecretion, and which occur in the course of an acute or chronic naso-pharyngeal catarrh. They are seldom primary, and in certain individuals there will be a recurrence with every cold in the head. These peculiar catarrhs may heal without any disturbance in hearing, remaining throughout a strictly local affection, but they may extend at once, or after several relapses, until they penetrate the tympanic cavity.

Acute middle-ear catarrh is particularly prone to appear during childhood, and is only too frequently overlooked and neglected. The

type of child most likely to be affected is the one who is "always taking cold," and who will usually be found to possess hypertrophied tonsils and large masses of adenoid vegetation. Progressive deafness in a child is often regarded as merely an evidence of "inattention" or "stupidity," and by the time it has become so pronounced as to be recognized the catarrhal condition has advanced so far as to have become chronic and it will be impossible to restore the hearing to normal. Therefore, the benignity of such a condition should never be permitted to induce neglect, as it may easily be the forerunner of a permanent disability quite beyond the remedial powers of even the most learned and skilled otologist.

Often the initial deafness will be the first symptom noticed. Pain is often—but by no means invariably—present, but it is seldom severe enough to cause marked distress. The otoscopic picture is detailed in many textbooks, but nowhere have I found so clear or impressive a description as was given by George W. MacKenzie of Philadelphia in a lecture delivered to a class of which I was a member, in February of this year:

The otoscopic picture is distinctive, but to detect its details requires trained powers of observation, for the faint yellow fluid behind the drum is not so easy to discern. In the milder grades of the disease the fluid does not entirely fill the middle ear, but strikes a level, running more or less horizontally across the drum. This level is the *niveau line*, which appears as a faint black thread thinner than a hair, with a slight meniscus concavity upward, produced by capillarity at the extremities and at the umbo—should the fluid have mounted to that level. The color of the upper half of the drum is gray, but below the niveau line there is a barely perceptible straw-color added to the gray. Below the line the drum membrane often presents a waxy appearance. If fluid has been present in the cavity for some time there will be "water-logging" of the membrane, which will show up like frosted glass. At this stage the cone of light will have disappeared, the roughness of the drumhead bringing about loss of the light reflex.

If it is possible to force air through the eustachian tube by inflation with the Politzer bag, bubbles will appear in the fluid, each bubble having a black line for its circumference, similar to the niveau line itself. These bubbles move about in a lively fashion, and if the fluid be thin, they will eventually rise to the surface and burst.

During inflation by an assistant, the changes in the niveau line and those marking the bubbles can be watched for. As inflation takes place the niveau line descends, and frequently the fluid will be entirely evacuated. But if the fluid be dense, which will be evidenced by the slow movement of the bubbles on inflation, the niveau line will not be lowered and the fluid will remain in the cavity, and though the bubbles will rise to the surface, the viscosity of the fluid will prevent them from bursting. The upper outline of the bubbles will now be identical with the niveau line, which will appear as a series of bulges. In the course of a few days or weeks the bubbles will break and their outlines be converted into cups, separated by peaks, the niveau line being correspondingly altered in shape, though the old

outline of the bubbles may still be seen as faint concave arcs, stretching from peak to peak. With the condition of viscid secretion these changes are obvious and may be seen in their progressive stages, for as time goes on the viscosity increases, because more fluid elements are being constantly absorbed. The terminal state of the untreated case shows a series of waxy pyramids at the bottom of the drum, peaks pointing upwards. Occasionally there is seen a waxy band stretching across the drum, its edges concave. It, too, speaks for dried-up exudate. Retraction and limitation of mobility of the membrane may or may not be evident. Transparency is diminished on account of the exudation, which has dried on the inner surface of the drum.

A more severe initial grade of acute exudative catarrh shows the entire middle ear full of fluid which may be, as in the milder cases, thin or viscous. Here the otoscopic picture is different from that described above. There is no niveau line, and the whole drum partakes of the yellow tinge that was before seen only below that line. The normally indistinct posterior margin of the hammer handle disappears and is replaced by a sharper posterior margin that, by its position nearer the anterior margin, gives an appearance of narrowing of the handle. This is due to the presence of an opaque fluid between the true unattached posterior margin and the drum. The membrane is soon water-logged, so that it becomes dull; the cone of light disappears; the entire drum looks waxy with a yellow tinge superimposed upon it. There is no bulging nor retraction.

In that form of inflammatory catarrh accompanied by an outpouring of sero-mucous exudate, which often begins in the course of an acute rhinitis or an attack of influenza, we have a condition intermediate between simple exudative catarrh and acute otitis media. This is described by Politzer as beginning with lancinating intermittent pains and marked congestion of the vessels of the malleus and of the external auditory canal, while there will be protrusion of the tympanic membrane, either as a whole or only in certain areas, usually the posterior superior quadrant. In most cases, instead of actual pain, there will be a sensation of fullness and numbness in the ear, such as is experienced when water has entered the ear while bathing. This annoying symptom is especially pronounced when the pharyngeal orifice to the eustachian tube is swollen. There may also be complaints of pressure within the head, and tinnitus is more or less in evidence. Autophonia—the peculiar loud resonance of the patient's own voice—is noted by Phillips as a most distressing symptom in some cases. Politzer quotes Gruber as stating that this is more noticeable in unilateral catarrh than it is in those cases where both ears are diseased. Fortunately, autophonia often disappears as soon as treatment is instituted, and seldom persists for any length of time after the catarrhal condition has been corrected.

The successful treatment of acute exudative middle-ear catarrh includes the re-establishment of the patency of the eustachian tube, the removal of the secretion from the tympanic cavity, and the reduction and permanent cure of the hypertrophy of the membrane lining the cavity and its consequent production of exudate. Should one fail

to remove the secretion from the tympanic cavity by inflation, and find by otoscopic examination the picture of an exudative catarrh, he will find that his patient will be relieved by doing a myringotomy, and inflation immediately afterward. Before doing the inflation, a small gauze wick should be placed in the auditory canal in contact with the drum, and upon its removal after inflation a string of the accumulated muco-serous exudate will be found attached to it. Inflation should be done each day following the myringotomy so long as there is an accumulation of the serous exudate. It is surprising how few of these treatments will be necessary in the acute cases to give the patient a comfortable ear with normal hearing. When the myringotomy is delayed the treatments are prolonged in a greater proportion.

A general survey of the patient's systemic condition is essential to the mastery of ear disease if a permanent cure is expected; and this examination should concern itself especially with conditions in the nose and nasopharynx. Kerrison asserts that tubal catarrh is almost invariably present in children suffering from pharyngeal adenoids. Inspection of the ears of children in whom a physical examination has demonstrated the presence of adenoids will usually show the drum membranes to be markedly retracted, and they may even be noticeably congested. In all such cases the pharyngeal growth should be removed, special care being observed to avoid injury to the cartilage at the mouth of the eustachian tube.

Dan MacKenzie, the eminent British otologist, has emphasized the following advice: "*In cases of eustachian obstruction, whether in children or adults, examine for adenoids.* He especially emphasizes, also, the necessity of getting rid of those growths which "cluster in the fossa of rosenmueller behind the nasopharyngeal orifice of the eustachian tube. Posterior ends of the inferior turbinal, if enlarged, should be snared. Deflected nasal septa should be straightened by submucous resection."

Often these surgical measures will be all that is needed to restore a full measure of hearing and the permanent cure of the catarrhal condition. In the majority of cases, however, the process will have progressed too far before corrective measures were undertaken, and we must devote our attention to restoring the patency of the tube and draining the tympanic cavity of its abnormal contents. Politzer originated the method of inflation which bears his name, and his plan has never been abandoned or been replaced by anything superior for the treatment of those catarrhal conditions where there is a bilateral affection of equal severity requiring the same amount and type of treatment. Frequency of treatments depends upon the necessity for inflation.

Catheterization of the tube is frequently practiced and has an advantage over Politzeration where the condition is unilateral, or where, for any reason, the tubes are to be inflated separately. Before this is undertaken the nose and naso-pharynx should be carefully cleared of all secretions and made as clean as possible, so as to minimize the danger of forcing any infective agents into the deeper portions of the tube or tympanic cavity. Phillips uses an application

of 2 per cent cocain in adrenalin 1:5000 along the floor of the nares and about the orifice of the eustachian tube, which serves the double purpose of reducing the swelling of the soft tissues and facilitating the introduction of the catheter.

Treatment of acute exudative catarrh, as outlined, will usually suffice to restore normal conditions, but every patient who has passed through an attack of acute middle-ear catarrh is liable to recurrence and should not be lost sight of. It is well to impress upon the parents of children in whom these middle-ear conditions are found the danger to hearing that may result from neglect, and to use whatever influence we may possess with the public at large to promote attention to these seemingly trifling affections, and to demonstrate at every opportunity the practical results of prompt and intelligent care of every "ear case."

DISCUSSION

Dr. O. P. Schaub, Winston-Salem: This is a very interesting paper. The Doctor said very little about the causative factors of this acute condition. I wish that he had said more. There are so many things that can bring about these acute catarrhs in children that it keeps us right busy eliminating the infection and devising treatment that will take care of that and give them permanent relief. The naso-pharyngeal space differs so much anatomically, and it is right hard at times to eliminate the adenoid tissue as we should. Some of them have straight posterior walls, others recession after you have gone up a piece, and it is hard to remove all adenoid tissue no matter what instrument you use. In the removal of this tissue we are working in space that we cannot see. Quite often we do an injury to the mucous membrane of the opening of the eustachian tube and patients have catarrh as much as before the tonsil and adenoid operation. We investigate and find that in our operation we have done a trauma that we wish we had not done. It is covered and we cannot see it. We find a spider web cicatrix or sometimes a band or sometimes a piece of adenoid tissue left in. Also, there is no knowing that we can promise the patient anything definite until we have eliminated all focal points, especially accessory sinuses and the teeth. I have seen some of these cases get well when referred to dentists for care of the teeth or treatment of pyorrhea, without any other treatment. They clear up and do not have a recurrence.

I am very glad to have heard Dr. Gibson's paper.

Major W. F. Von Zelinski, Fort Bragg: If you will pardon my speaking again, this brings out a very important point, perhaps not exactly germane to the paper read, but it offers an opportunity to bring something to your attention.

For some time I did all of the eye, ear, nose and throat examining, at Fort Bragg and other places, of the recruits, and also of candidates for commission and candidates for West Point. I was simply appalled at the number of young men with bad hearing, many of them with no history of acute conditions like otitis, but many had diseased tonsils and abnormal septums. I want to call attention at this time

to the fact that something ought to be done in the way of spreading propaganda for the conservation of hearing. It is unfortunate, in a way, that there is not some kind of apparatus that manufacturers can sell as they do spectacles, then propaganda for care of the ears would be more prevelant. Inasmuch as they can sell eye glasses and have nothing of the sort that they can sell for the ears, the ear is sadly neglected in urging the examination and treatment for impaired hearing.

I do not believe there is any patient who has had measles or scarlet fever or acute colds, or any of the respiratory diseases, who should be turned away without the hearing being tested. I do not mean that they need a regular tuning fork outfit. The whispered voice is a pretty fair test if carried out properly. Twenty feet will allow for any kind of acoustics. If you have good acoustics you can test at 50 and 60 but you do not always have that, but you have an office or hallway or something of that sort, and by firmly blocking up one ear so that you can cut out the hearing in that ear, you can give them whispered words—I usually use numbers—and if they cannot get them at 20 or 15 feet, their ears should be investigated. It is unfortunate that you gentlemen get these people after their hearing is bad, after it has been going on for some time, and in a majority of instances the best you can do is to hold the hearing where it is, though in a few cases you might improve it. The paper that the Doctor has read here shows one of the very prevalent causes of impaired hearing. As you know, in the army you cannot accept a man whose hearing is less than 15/20 in either ear. This is the whispered voice. We have great numbers of rejections, and I would like to leave this idea with you who are in this special work and can carry it back to your various communities, that the question of hearing in children and young adults should receive closer attention than it has been receiving, and I think the man to start with is the man in general practise. Usually, when he has a case of respiratory disease, as soon as acute symptoms have subsided and there are no acute complications he has finished, but it is easy for him to test out that patient's hearing even if there are no ear symptoms during illness, and if he is at all in doubt he should refer him to a specialist.

Dr. Gibson, closing the discussion: Exudative catarrh is caused by imperfect ventilation and drainage. In looking for the picture that I have described, I want to say that you will not see it with the naked eye. It is going to be necessary to use a magnifying glass of some kind. In inspecting that picture, the first one described, especially, you will have to use a magnifying glass. This line is so fine that a hair is often mistaken for it. You can move their hair and make discrimination there. Even then it is absolutely necessary to make diagnosis and see the niveau line move. It is very easy if you use a magnifying glass while you watch the inflation by an assistant.

In my opinion, the paper that I tried to present to you is propaganda which the Major suggests. I am sure that these conditions bring about more rejections of soldiers than any other condition,

because it is the fellows who hear fairly well but just below the test who fail, because according to the regulations they must come up to a certain standard. The majority of the cases are from catarrh.

BUSINESS SESSION

The following resolution was offered by Dr. J. G. Murphy, of Wilmington:

Resolved: That it is the sense of this Section that a yearly symposium on some particular subject, to be led by members named by the chairman of this Section, would add greatly to our programs.

After discussion of the resolution and of the advisability of having two sessions, one to be devoted to such a symposium as contemplated therein, the matter was referred, by motion, to a committee of four, the chairman of the Section being an *ex officio* member.

Committee:

Dr. H. L. Sloan, Charlotte,
Chairman of Section, Chairman *Ex Officio*
Dr. O. P. Schaub, Winston-Salem
Dr. J. G. Murphy, Wilmington
Dr. V. M. Hicks, Raleigh

SECTION ON GYNECOLOGY AND OBSTETRICS

F. Webb Griffith, M. D., *Chairman*, Asheville

CHAIRMAN'S ADDRESS
GYNECOLOGICAL TINKERING

F. Webb Griffith, A. M., M. D., Asheville

Into every phase of the practice of medicine errors constantly creep. Usually after a brief period they are detected and eliminated. Some, however, manage to persist year after year and from generation to generation until they are accepted as truths. Worse still, they are passed on to the laity where they become so rooted as to be well nigh impossible of eradication. He who has the temerity to even question, much less deny these time honored convictions, runs the risk of being considered radical, or what in medicine is a greater sin, unorthodox.

While gynecology has been practiced in some forms from time immemorial, yet the real gynecology as it is known today dates back scarcely half a century. Time does not permit us to mention, much less discuss, the many errors that have crept into gynecology even since the time of our grandfathers. I shall, therefore, discuss only a few of the common mistakes that you and I are prone to make in our daily work.

Curettage. For the removal of polyps, retained secundinal, or hypertrophied endometrium, curettement is almost a necessity, while in such conditions as dysmenorrhea or sterility it may be helpful. The procedure is an easy one, which can be performed by practically any physician who has the slightest manual dexterity. Therefore, it is frequently used in an empirical manner without much regard for indications and contra-indications. While in the majority of cases it will do no harm, it is a long way from being a panacea for the numerous pelvic ailments for which it is applied. Beside being in most cases useless, it has certain definite dangers. In the puerperal cases puncture of the soft uterus with the curette is by no means uncommon. There is no way of telling how many mild and dormant cases of salpingitis or endometritis have been made fulminating by the injudicious use of the curette.

How long will it be before the medical profession and the laity, through the medical profession, will learn that curettage does not cure or greatly benefit leucorrhea? A large percentage of cases consulting me primarily for leucorrhea have had a previous curettage with no benefit.

The Vaginal Examination. In the routine examination of the female patient for obscure conditions the physician, either through false modesty or because of mild protests from the patient, is apt to omit the vaginal examination. It is almost impossible to be certain of the diagnosis in the lower abdomen or pelvis of a woman without a pelvic examination. On the other hand, the vaginal examination is not justifiable in the virgin except under anesthesia. A cleansing

enema followed by rectal examination can in the virgin give practically as much information as the vaginal examination. Should the examiner for any reason feel that it is absolutely necessary to make a vaginal examination in these cases he should administer an anesthetic.

The Tampon. Like the vaginal examination, the tampon has practically no place in the treatment of virginal women. I am glad to say that the tampon habit is apparently not as prevalent as it was ten or fifteen years ago. As a means of applying medicines in vaginitis, for the control of hemorrhage incident to pregnancy or the puerperium, and as a test of the probable benefit of an operation for a displaced uterus, the tampon is valuable. To replace tampons week after week and month after month, in order to support a uterus which tends to displacement, is unjustifiable except in those rare cases where because of a serious organic lesion operation is strongly contra-indicated. It is true that a snugly fitting tampon in patients with moderate vaginal relaxation will frequently give a feeling of support and comfort, but to continue such treatment indefinitely is a dangerous and pernicious habit.

The Pessary. Most obstetricians, I believe, advocate a suitable pessary in many of their puerperal cases. As I do not take obsteterical cases I shall not presume to discuss that phase. In the treatment of my gynecological cases, however, the pessary is almost obsolete. Not infrequently patients come to have removed, cleansed and replaced a pessary placed by some other physician. In the great majority of such cases, however, I find the uterus displaced and the pessary lying low down in the vagina. It is true that a carefully selected and well placed pessary may maintain the uterus in fair position and serve as a test of what might be expected from operation. Unless, however, operation is contra-indicated, there is no more justification in inflicting a pessary on a woman for the rest of her life than it would be to urge a truss for hernia.

A number of years ago we saw a fairly large number of cases of procidentia in the aged, and for these the ring pessary worked fairly well. Today, due either to better obstetrics or to the fact that repair work is done earlier, we do not see nearly as many such cases.

Retrodisplacements. A retroflexed or retroverted uterus is not necessarily pathological, and the displacement alone is not sufficient to justify a suspension. When I find a symptomless retrodisplacement it is my custom not even to mention it to the patient, for if she becomes aware of it many symptoms are apt to appear. It is so easy to attribute to a displaced uterus the numerous aches and pains in the back and pelvis and to rush into operation, only to find later, to the sorrow of the patient and the chagrin of the physician, that the symptoms have not been altered.

Emmenagogues. While not especially harmful, there is probably no other group of medicines in use today which is more worthless than the so-called emmenagogues. Amenorrhea, or the absence of menstruation, is, in the vast majority of cases, merely a local manifestation of a constitutional condition. Except in pregnancy, the cause for amenorrhea, in practically every case, should be sought for

outside of the pelvis. Of course, I do not include the amenorrhea of infantile genitalia or where some of the genital organs have been removed.

In the non-pregnant amenorrheas a pelvic examination is not necessary for the correct treatment of the patient. What earthly good would any amount of manganese, apiol, colocynth or aloes do for the amenorrhea of advanced tuberculosis? How much more rational to treat the amenorrhea of an overworked, undernourished, anemic shopgirl with fresh air, nourishing food and sufficient rest, than with Dr. so-and-so's pet formula? In brief, we can well dispense with every so-called emmenagogue, and devote our energies to the treatment of the underlying constitutional cause.

Metrorrhagia. While, as stated above, it would make no vital difference to the patient if a pelvic examination is never made for amenorrhea, on the other hand all cases of uterine bleeding between the periods demand a thorough local examination. It is true that some of the cases of metrorrhagia are due to constitutional disorders, yet in nearly all the cause of the bleeding can be found in the pelvis. In some conditions, such as submucous myomata or cervical polyp, delay does no harm, while in others, such as carcinoma or even ectopic pregnancy, delay may be fatal. Therefore, to continue day after day giving ergot, hydrastis or similar drugs to check the bleeding is not only tinkering but criminal. Yet scarcely a week passes without our seeing such a case having been treated for a month or more without any effort being made to ascertain the cause of the bleeding.

Ulceration of the Cervix. Ulceration of the cervix is a most common gynecological diagnosis and a rare gynecological condition. It has been my privilege to make many thousands of gynecological examinations, and except in cancer, or where the uterus is prolapsed and has been rubbed by a pessary or some external object, as the clothing, I could easily count on the fingers of one hand all of the cases of ulceration which I have seen. What, then, is the condition so frequently diagnosed, "ulceration"? You will recall that the lining of the cervix from the internal to the external os is a single layer of epithelium, while the outer or vaginal portion of the cervix is covered by many layers of epithelium. In lacerations of the cervix and in many diseases which cause a congestion of the cervix, there results a slight eversion or rolling out at the external os, and a consequent exposure of the cervical canal. The blood vessels shining through this single layer of epithelium give a reddish, beefy appearance, which is the normal appearance of the cervical canal. The application of silver nitrate or some other caustic will cause a proliferation of the single layer into many layers, just as there are on the vaginal side of the cervix. The patient is then assured that the ulceration is cured. After a few weeks or months these new cells will desquamate and the ulceration is said to have recurred. The same cycle of treatment is then gone through again as long as the patient will stand for it. If the eversion is due to marked laceration a trachelorrhaphy should be done; otherwise it should be left alone, for local applications in these cases, while remunerative to the physician, are a source of worry and unnecessary expense to the patient.

I might continue the discussion into the various phases of gynecology, but as we have a lengthy and interesting program this afternoon, it is not fair to monopolize the time by a mere chairman's address.

In conclusion, may I again emphasize the fact that in gynecology there are abundant medical and surgical procedures from which to choose, so that we can well afford to discard those measures which have been shown to be either entirely or almost useless?

UTERINE PROLAPSE

R. L. Gibbon, M. D., Charlotte

It is very probable that, were it possible to delve into the remote past of the human race, it would be found that procidentia was a not uncommon occurrence among the females of that dim and misty period of which we have no historic record, because at the present time, among certain semi-civilized peoples where the woman does much of the "heavy lifting" and receives very little care or consideration during parturation and immediately afterwards, this condition is said to be rather frequent.

If this be true it is, then, no new situation that confronts us, but one that has received the careful consideration of generations of our profession. To one historically inclined, and with time to spare, both on the part of writer and auditor, what an interesting assembling of observations, discussions, theories and methods of treatment might not be gathered from the literature of our professional forefathers!

A very brief excursion into contemporaneous writers, however, will speedily dispel any idea one may entertain of presenting all the aspects and associated lesions of uterine prolapse in one paper. In spite of the length of time in which this condition has been before the medical profession, one is immediately confronted by the number and variety of operations which have been devised for its remedy—in number, some one has estimated, close to a hundred. In a multiplicity of remedies it is pretty safe to assume that none are ideal, and so it is not surprising to see a statement in the American Journal of Obstetrics and Gynecology of recent date, by an author of distinction, to the effect that "the uniformly successful operation for the cure of prolapse of the uterus is still one of the unsolved problems of gynecology." The writer goes on to say that so many factors enter into the problem that no completely successful, uniform technic has been developed. It is very probable that most if not all of us will agree to the above, especially since none here, to the best of my belief, are devisers of any particular operation.

We find uterine prolapse occurring in an almost indefinite number of graduations or degrees, from the slight sagging or descent of the pivotal point of the uterus at the internal os, as described by Graves of Boston, to the presentation of the hypertrophied elongated cervix at the vulval opening, and the final stage where the entire uterine body is protruded. We further find that this condition may be present in young unmarried women, although it is comparatively

rare; that it is seen during the childbearing period of life, and is not uncommon in the later periods of life, many cases being seen in women over fifty.

For the sake of time, and because it is unnecessary, we omit any discussion of questions of etiology, symptoms, or diagnosis, and will consider here only the various methods of surgical relief. As has been previously stated, the operative measures which have been designed for this purpose are legion, but a philosophic and fair examination of the varying and ofttimes conflicting claims made would lead the impartial observer to reach a conclusion somewhat similar to that expressed by the liquor addict, who, when asked to give his opinion on the different brands of whiskey, replied that they were all good, but some were better than others. All of the standard operations have undoubtedly given good results when employed in proper types of cases, while, in the opinion of men with the widest experience, none can be considered as entirely fulfilling all the requirements of an ideal operation.

It is hardly necessary to call your attention to the fact that, aside from the technic we personally favor, the age of the patient and the degree of prolapse must exercise a more or less controlling influence upon our surgical measures. What would be acceptable in a woman past the menopause would probably be bad surgery in a younger patient. The possibility of future pregnancies must also receive careful consideration.

Coming now to the different types of surgical treatment we find that the numerous measures, many of them bearing the names of men prominent in the profession today, naturally fall into two groups; viz., those seeking to support the falling uterus from below by the various kinds of plastic and interposition operations, and those who attack the problem from above and in so doing make use of the ligamentary uterine attachment. In this latter group we may also place operations designed to produce artificial ligamentation, as in ventral suspensions and fixations. It is between the advocates of these two groups that we find a great gulf fixed. In evidence of this it may be apropos to quote from an article by Graves in the American Journal of Obstetrics and Gynecology, August, 1923.

"It is necessary for me at once to make the admission that not since my early work, in which I discovered the futility of curing a general prolapse by ordinary plastic methods, have I attempted to cure such a case solely by an operation from below, even in the face of recommendations from such eminent surgeons as those whom I have mentioned above. And this course I have pursued as the result of a conviction, acquired many years ago and strengthened by experience, that the cardinal lesion of prolapse is the descent of the pivotal point of the uterus, and that its cure symptomatically as well as anatomically demands an elevation of this point to a plane in the pelvis as high as it is possible to place it. It is difficult for me to conceive that this object can be attained as well by a supporting operation executed through the vagina, as by a suspensory operation executed abdominally." *Per contra* we might quote from an article in Annals of Surgery, July, 1922, by Dr. Hurdley of Baltimore,

who, in a report of thirty cases of prolapse in which he employed a modification of the Watkins or interposition operation, in concluding says: "The interposition operation gives better results than any other operation we have used in the extreme cases of uterine prolapse."

Without attempting to arbitrate this phase of the subject, let us consider briefly some of the advantages and defects which have been urged for and against the better known types of operations of both kinds.

Taking up first those procedures designed to support the sagging uterus from below, of which the Watkins operation is the general type (although this has been variously modified by numerous operators), the essential feature of all being the interposition of the body of the uterus between the anterior vaginal wall and the bladder, we find many reasons to justify their advocates. There is less shock than in an abdominal operation, which, in addition to the abdominal work, practically always requires a certain amount of vaginal work for the vesicocele, perineal rupture, etc. On the other hand there are limitations in its application, as in the childbearing period, where it is necessary to sterilize the woman, and in certain intra-abdominal complications, as where the uterus is firmly fixed, or enlarged by tumor formation, etc. Attention has also been called to vesical irritability that is sometimes reported to follow the operation. Also, where the technic is not carried out perfectly, there is a post-operative sagging of the anterior vaginal wall which makes the patient believe the original trouble has returned. This is said to be due in part to an insufficient removal of the superfluous anterior vaginal wall, or to an incorrect fixation of the uterus. Of course, where there is a complete failure there is a return of the prolapse plus such additions as may result from the operation.

Some very effective methods to perfect the interposition operation have been made, such as bringing a section of the broad ligament in front of the cervix together with the fascia of the anterior vaginal wall. In extreme cases it has been suggested that, as one of the predisposing causes of prolapse is an abnormally deep posterior culde-sac, this be plicated and the utero-sacral ligaments be shortened. At the 1922 meeting of the Southern Surgical Association, Dr. H. J. Bolt read a paper describing a modification of the interposition operation as done by Dr. Keilland of Christiana, Norway, who has used this technic in 150 cases with no recurrences. The uterus is placed parallel with the vaginal wall; the cervix is not amputated, but a section is removed from both the anterior and posterior lips. In reply to a suggestion that the operation as described would seem to present considerable difficulty, Dr. Bolt replied that in his experience it was easier than the ordinary Watkins. For the benefit of any one desiring to look into the details of the method, Dr. Bolt's article can be found in the transaction of the Southern Surgical Association for 1922.

We now will consider the type of operation in which an attempt is made to support the uterus from above by the utilization of its own ligaments, or by an artificial ligamentation. Here we have quite a long list to choose from, of which the best known are the Alexander

(and its modification by Mayo), Coffey, Baldy, Webster, Gilliam (and Kelly's modification of Gilliam's), and Alshausen suspension. Merely to mention these names is sufficient to call to your minds the distinctive features of most if not all of these operations.

The internal Alexander operation, as described by Mayo, has been criticised on the ground that it uses the distal extremity of the round ligament, which is the weakest portion, as a support, and that it is apt to be followed by adhesions and once in a great while by intestinal obstruction. To avoid some of these objections the operation was modified by Simpson, who drew the round ligament through the inguinal canal, thus doing away with the necessity of puncturing the peritoneum, and curtailing the danger of adhesions and obstruction. The chief objection seemed to be that this operation allows too little latitude in choosing the height to which the uterus can be elevated.

The Coffey operation, which you may recall is a a reduplication intra-abdominally of the round ligament, together with a portion of the broad ligament, has proven satisfactory in the hands of some, but has been abandoned by others as unsatisfactory. The Baldy-Webster operation, consisting of carrying the round ligaments through a rent in the broad ligament and stitching behind the uterus, has fallen into disrepute, largely because of the frequency of adhesions and failure to hold the uterus up. All of the foregoing methods have been criticised, not only on the ground that they depend for support upon the strength of the small and often attenuated end of the round ligament, but because the pull upon the uterus is exerted in an oblique line and permits more or less sagging.

Probably the most popular operation of this kind in the past has been that of Gilliam and the modification by Kelly, the round ligaments being brought through the peritoneum, muscle and fascia of the abdominal wall and sutured fast. This method has given satisfactory results in the hands of a considerable number of operators, and yet, while the supporting power is the proximal or thick end of the round ligament, and the pull is direct and not oblique, it is open to objection from the standpoint of the likelihood, or perhaps more accurately speaking, the possibility of obstruction, traumatism of the abdominal wall, and the development of a ventral hernia through the opening in the fascia. This latter, however, must be rather rare. In Kelly's modification the ligament is brought only through the peritoneum and muscle and fastened underneath the fascia.

Just now the Alshausen suspension operation has some very considerable advocates, notably Graves of Boston, who says that it more nearly meets the ideal requirements than any other with which he is familiar. The technic is simple, consisting in passing a No. 7 braided silk suture beneath the round ligament, which has been previously grasped by a heavy forceps about half an inch from the uterus. The suture is then passed through the peritoneum, muscle and fascia, an inch and a half from the incision, and then back again in the same manner into the cavity, and the knot tied on the inside. It must be tied as tightly as possible, as the point is to get a firm adhesion to the abdominal wall. The fly in the ointment is this buried silk suture, which occasionally causes delayed union with a discharging sinus,

and now and then has to be removed. Graves states that he has personally performed this operation 1,370 times, one half of the cases being general prolapse in all stages. Of these cases 746 have been followed up at periods ranging from a few months to eight years after operation. In 6 the trouble recurred, three of these following labor. In 15 of the 1,370 cases one of the silk stitches became infected, and in 6 of these the stitch required removal. In the remaining 9 the wound healed, or the stitch was discharged. This silk suture is considered by Graves as absolutely essential to the succes of the operation, although I notice in the discussion of his paper, which was read before the New York Obstetrical Society in February, 1923, that some of the other men were using heavy chromic gut instead of the silk. It is hardly necessary to say that, whatever supporting operation from above we may favor, many cases require in addition a plastic from below to take care of the cystocele and rectocele that is so often present in marked degree.

Some years before his death the late Dr. John B. Murphy described a ventral fixation operation for extreme prolapse, adapted in the main to old subjects, that so far as I have seen attracted very little notice; in fact among my professional friends I have found none who have used the method described by Dr. Murphy. I think he called it the "bat wing" operation. In brief, the technic consisted in ligating the broad and round ligaments and separating the uterus, which was dissected and the two halves or sections stitched fast to the fascia on each side of the wound. The skin incision was transverse, thus allowing ample room for stitching the uterine flaps or wings to the fascia. Dr. Murphy thought that this operation, because of the firm fixation of the uterus, would render any plastic work below unnecessary. I have employed this procedure in four or five cases of marked prolapse in old women with good post-operative results. The uterus certainly never comes down, and the operation is easily done Its chief defect is taking care of the vascular ooze from the uterus, and although I followed the advice of the originator and provided for ample drainage, I was somewhat alarmed in my first case to find that in 24 hours my patient's entire abdomen was black as a result of the extravasation of blood throughout the loose fatty tissue, nor did I in subsequent trials discover any effective method to avoid this. For the same reason a certain amount of wound infection is apt to take place. Having passed through this stage, however, all of the patients were permanently relieved.

I am aware that in a discussion of this subject there is room for a wide variance of opinion and methods, in all of which there is both merit and demerit, and that it may truthfully be said that "the end is not yet," but, having used most of the methods which have been described above, I am at present inclined to the exercise of the principle of selection in the individual case, rather than a rigid adherence to one particular method.

DISCUSSION

Dr. C. M. Strong, Charlotte: The Doctor said that a variety of operations admits of variety of discussion. Those of us who have done gynecology for a number of years have tried most of them, and every new variety that has come out. Probably all of the defects come from the fact that we take those operations from the book. No man can follow an operation from a book as he can from seeing it himself, so my advice to any woman who is going to have a special operation is to go to the man himself who does it. You have to work this out as you would your salvation, with fear and trembling, work it out yourself, but I do it my way. It may not be the best, but I have had a good many of those cases to record.

The keynote is the size of the uterus, barring the age of the patient. It does not matter what the operation, if you have a great big uterus you will have after-trouble, because of the fact that with any form of fixation that you give the uterus, if the uterus is too heavy it will pull down. I am radical when it comes to a big uterus; I do not do the operation; I take the uterus out. If the uterus is small it stays there. I prefer that to the Murphy operation. I recall doing a Murphy, and the woman menstruated through the abdominal wall for ten years. That scared be off the Murphy.

Dr. R. T. Ferguson, Charlotte: Dr. Gibbon has given an excellent paper on a subject of great interest to all gynecologists. The most important part of the paper was the last paragraph, that each case has to be judged according to the condition that you find.

I agree with Dr. Strong that every large uterus should be taken out. You have to remove the uterus first and then do the plastic operation. No man doing gynecology will have success in all cases.

Dr. Oren Moore, Charlotte: I want to add something to Dr. Strong's remarks. Dr. Gibbon was in error when he said that nobody here had devised an operation. Dr. Strong, with my able assistance, devised a beautiful one years ago. Splitting a portion of the serosa, we raised the uterus, brought through the fascia of the wall and fasfastened it against the peritoneum. That lady menstruated for ten years through the abdominal wall, and would still, if we had not operated ten years later.

One thing that strikes me, in the question of suspending the uterus, is that we regard the descent of the uterus as a separate entity, whereas it is the result of loss of support below and intra-abdominal pressure above. You cannot consider only one factor. If it is due to a heavy uterus, plus loss of support, you have to lighten the uterus; if due to lack of support above, so-called stretched ligaments, that must be remedied in addition; if due to increased abdominal pressure, that must be taken care of. Any operation is as good as any other in the hands of every operator if you consider the cause of the descent, but without full consideration of the cause you are bound to have a return of the same condition.

Dr. Gibbon, closing the discussion: In justice to Dr. Murphy, I omitted, in describing the technic, that while he advises this operation chiefly for very old women, where menstruation is not taking place, he advises removal of the endometrium in cases where there is any possibility of menstruation. He says it will give great trouble if you leave it, as Dr. Strong's case illustrates. In regard to very large uteri with complete prolapse, I agree with Dr. Strong that it does not do to have them recur. It deters every old lady with prolapsed uterus from having anything done. You cannot, in a small community, take the same chance of failure by trying a new operation as you might in a large clinic.

UTERINE RADIUM THERAPY

Douglas P. Murphy, M. D., Rutherfordton

Radium has now made for itself a permanent place in therapeutics, and new fields for its use are constantly being found. It has been proven to be of particular value in the treatment of uterine diseases and here in many cases has become the method of choice. Radium can often be very useful in still other cases in which an operation would have been performed were it not contra-indicated by the general condition of the patient.

Great care and skillful judgment must be used in selecting proper patients for radiation. The radiologist and surgeon must work together. If radium is applied in an unsuitable case, results such as we wish are not obtained, and the patient suffers and the reputation of radium as a therapeutic agent is damaged.

Most observers agree at present that carcinoma of the cervix can be better treated by radiation than by operation. The number of five years cures by this method exceed those treated by surgery regardless of the stage of the condition. The early cases are cured and those more advanced receive great relief from their symptoms.

The Rutherford Clinic, since its opening in July, 1922, has treated upwards of fifty patients suffering from carcinoma of the cervix. Many of these patients came too late for anything but palliation, but all of them have been benefited by their treatment. Let me review briefly the histories of two patients having carcinoma of the cervix, both of whom received radiation, only.

Case No. 1. E. W., colored, examined November, 1922, complained of bleeding and a foul discharge which had begun almost three years ago. She presented an ulcerating fungoid mass, the size of a half dollar, on the anterior lip of the cervix. Treatment consisted of the implantation of six seeds of emanation around the base of the growth, and she received an additional 3,000 mch. in the cervical canal. Six months later the vaginal lesion was completely healed and the patient stated that she felt perfectly well.

Case No. 2. G. J. A., a white female, age 48, examined February, 1923, reported having had irregular bleeding for the past three months. The cervix was the site of a deeply punched out crater, extending entirely across it. Its edges were thin but there did not appear to be any involvement of the broad ligaments.

This we would have classed as a doubtfully operable case. Treatment consisted of a 3,000 mch radiation of the cervical canal. Three months later, after some relief, discharge and pain began again. At this time heavy external radiation was applied front and back, and was repeated again in three months. One year from the time of the first treatment examination showed her cervix to be perfectly healed and she stated that her general health was excellent.

The use of radium in metrorrhagia is well illustrated for the two following cases:

Case No. 1. S. W., female, age 17, complained of metrorrhagia for the past four years and had bled almost daily for the last year. A d. and c. had been performed three years ago without relief. Examination showed the uterine canal to be of normal length and the organ otherwise negative. A small radium exposure in the cervical canal was made in August, 1923. Seven months later, she reported that she had bled a little every day for the first two weeks after the treatment. This was followed by no bleeding for a month. From then on, she bled a small amount every three weeks and each period lasted one day. This patient is now perfectly well and doubtless later her periods will become a little longer.

Case No. 2. Mrs. G., age 48, had not been well for the past two years. For a month she had been bleeding somewhat every day. The uterus was found to be slightly enlarged. The endometrium was a little soft but no curettings were obtainable. Two months following a heavy radiation she stated that she was feeling well and had been doing her own housework for the past four weeks. Prior to treatment, she had not done any work for almost a year.

Myomata when small and when the uterus is uniformily enlarged are especially amenable to radium therapy as shown by the following case:

Mrs. C. C. W., age 47, had had metrorrhagia at times with severe hemorrhage, for the past two years. Refusing operation, she had come to us for radium treatment. Seven months after radiation, she reported having had no bleeding whatever, and the uterus was normal in size.

Radium we have found can be used beneficially in treating endocervicitis, where there is no other pelvic inflammatory disease. It gives some relief in cases of dysmenorrhoea. It is an effective means of sterilization of women and as a prophylaxis for cancer it may have some value.

There are, of course, a few disadvantages in the treatment by radium. Great damage can be done by those unfitted to administer it. Improperly used there is danger of rectal and bladder irritation and of fistulae production. There is also the possibility of endangering the ovarian function in young women, but its greatest danger lies in its use in cases not suited for radium therapy.

Its advantages, however, over operation in uterine disorders are many. It is rare that an anaesthetic is required in applying radium, save in the case of very young, unmarried women and those extremely sensitive. The complications, dangers and sequlæ of an open operation are avoided; hospitalization is reduced to less than one-quarter

the time necessary for operation. In the hopelessly inoperable, pain, discharge and bleeding are lessened and the morphin period of existence is decidedly shortened.

THE USE OF RADIUM AND X-RAY IN GYNECOLOGY

John D. MacRae, M. D., Asheville

The sincere radiologist wishes to be considered a man of science and not a propagandist. His greatest interest is in contributing his share in the battle against disease.

To speak of surgery as the "handmaiden of radiology" is no more right than to reverse the expression and to say that radiology is subservient to surgery. It is not wise to set one means of fighting disease over against the other, for we look on them as allies in the great war to relieve suffering and prolong life. Co-operation between surgeons and radiologists is essential for our best results.

I was a medical student in 1895 when Roentgen discovered X-rays. It was three years later, 1898, one year after my graduation, when Mme. Curie discovered radium. So it has been my privilege to watch the growth of radiology from its first beginnings and to practice it for nearly twenty years.

It is a thing to be proud of; to have started in the field of radiological work so near to its beginning.

Neither the discoverer of radium nor of X-rays was a physician, but each had the vision and high ideals of a true scientist and their discoveries have been given without reservation for the benefit of humanity. It is a satisfaction to know that in each instance their respective governments gave them pensions.

Naturally pride has led and will lead enthusiastic radiologists to claim too much for our specialty. We too often treat cancer patients who are doomed to death, with only the hope of alleviating suffering and giving them a few months or years of added life. We watch them die in spite of our efforts. In the face of such experiences our optimism wanes. Our over-enthusiasm is constantly being curbed and we are put back in our places by the records of our cases and by the dispassionate studies of scientific investigators.

I have made these opening remarks with the purpose of showing you that we are not propagandists, that we are striving to put true values on our methods and results.

Gynecologists are coming to recognize the usefulness of X-rays and radium in treating carcinomata of the vulva, vagina and uterus, as well as benign conditions involving the generative organs.

Inoperable cancers are sometimes made operable by X-ray and radium treatment and occasionally an unexpected cure is obtained. Surgeons do not avail themselves of radiation treatment as early as they might and patients do not present themselves for examination early enough. Consequently impressions are formed from observation of the most desperate cases.

Results obtained in the benign group are striking, especially in fibromyomata of the uterus.

Selection of cases depends on age and character of the new growth.

Age. A woman nearing the menopause, being past the child-bearing period and having a tumor which is not malignant but which is causing menorrhagia and metrorrhagia, will respond splendidly to radium or X-ray treatments or to a combination of the two agents.

Pedunculated tumors, or those which are very large and producing pressure symptoms demanding quick relief, had best be treated by surgical removal.

Curettage and microscopic examination of the scrapings should be done in those cases where suspicion of cancer of the fundus exists. Such patients, if malignant cells are found, should be submitted to surgical removal, but inasmuch as the curettage may stimulate or increase the danger of extension or matastasis, it is wise to make immediate application of radium and X-rays in order to localize the lesion by sealing of the lymphatics and vessels to drainage areas. This pre-operative treatment should be followed in about ten days or two weeks by operation and it is to be expected that by it surgical risk will be lessened in the presence of malignancy.

A group of cases representing younger women who hope to be mothers, under about thirty-five years of age, are to be dealt with in accord with the conditions peculiar to each one, for radiation treatment may produce complete sterilization.

The method of treatment which I use has varied and, from the beginning, all technics have resulted in a very high percentage of cures. The failures, and they have been few, have occurred from bad judgment in selecting cases. In this connection I attribute my good results to conservatism, close co-operation with my surgical associates, and the fact that fibromyomata of the uterus are comparatively susceptible to radiation therapy.

The earlier cases were treated with X-rays, before the advent of the Coolidge tube. The doses were delivered from gas tubes and measured by the color changes produced in pastils of barium-platinocyanide, through many ports of entry focusing on the uterus and adnexa a complete dose being given in one, two or three sessions on consecutive days and then being repeated at monthly intervals for about six times. This method resulted in almost immediate reduction of hemorrhage and complete cessation of the menses after the second or third month. The reduction of the size of the tumor followed more slowly; hence the continuation of treatments after menstruation had ceased. Generally the tumor disappeared; in practically all cases it became much smaller.

When the Coolidge tube was devised and I began using it, its greater power and controllability permitted the giving of heavier doses through fewer and larger ports of entry. The same results were obtained but in somewhat shorter time. The tendency is steadily toward completing the treatments with fewer sessions. The larger doses have caused about the same amount of radiation sickness.

Between two and three years ago the question of installing more powerful X-ray equipment became acute with me. After considering it carefully I determined to continue using my X-ray outfit at

150,000 maximum voltage and adding radium, so that I now apply radium within the uterus and vagina, according to the nature of the tumor, and combine it with the massive X-ray doses from without. As a result one session is generally enough. Unless the tumor is of great size one eighteen hour application of fifty milligrams of radium, screened with two millimeters of brass and two millimeters of rubber, is used.

The X-rays produced by 150,000 volts are filtered through copper of a certain thickness, which stops those soft rays which are undesirable and permits the passage of homogeneous rays. The volume is thus reduced while penetration is increased. This change calls for longer exposures, but effective doses are thereby accomplished at greater depths.

When the case is suitable and cessation of bleeding without precipitation of the menopause is desired, the doses are made much smaller, using radium or X-rays to get results. In undertaking this type of cases the patient must be given to understand that she is taking the risk of sterilization, for the radiologist can not, himself, be sure of stopping the effect of his treatment at the desired point.

Uterine hemorrhage of indefinite origin, that is where no fibrosis is demonstrable, is peculiarly responsive to X-rays and radium. The condition yields to such small doses that I have not hesitated to treat young girls who were suffering with profuse menstrual bleeding. Of course great care must be observed, but it is possible to relieve them without great danger of sterilization.

Endometritis which fails to yield to ordinary methods of treatment yields sometimes to radium treatment.

Malignant disease of the uterus is so often unrecognized until it has become advanced that many are inoperable.

Cervical cancer has been treated with hysterectomy preceded and followed by deep X-ray and radium therapy, but some are coming to treat them entirely with radiations. Simpson quotes statistics to show that this is justifiable. If there is doubt as to operability radium is most advisable, for many such cases will be rendered operable. The London Radium Institute says in its report that uterine cancer continues to yield most gratifying results and the effect of radium in inoperable cases is far in advance of any known surgical procedure. Simpson says that "certain authors are of the opinion that twenty-five per cent of inoperable uterine and vaginal cancers can be cured by radium."

No one technic is applicable to all cases. Consideration of the average of doses used by different men has made me adopt 3000 milligram hours of radium applied in the cervix, in the fundus and against the cervix as a standard from which I vary according to circumstances. As I use fifty milligrams, the exposures are with this amount in two millimeter brass capsule, applied for twenty hours each in the different locations mentioned; also fifty milligrams sometimes used in five needles thrust into the neoplasm. Then, to reach the more distant regions, I apply X-rays externally. The question as to whether the dose can be started and given without interruption until finished depends on the patient's general condition. This is to

be determined by blood and urine examinations and history. If cachexia is marked, hemoglobin low and the kidneys functioning badly, treatment may not be advisable.

In cancer of the body of the uterus hysterectomy had best be done and radium and X-ray used before and after operation as an adjunct to surgery.

The latest development of X-ray therapy is in the use of rays produced with generators using two hundred to three hundred thousand volts. Such rays have greater power to penetrate the tissues and make it possible to give the depth dose in a shorter period of time. They are strongly advocated by our most enthusiastic men, who undertake to administer a lethal dose to the neoplasm at one time. It is the opinion of such men as Robert Knox of London that great injury may be done to the patient by the more drastic methods, and he is therefore inclined to divide the massive doses for the sake of protecting the patient.

It was the feeling that sufficient dosage can be given by a combination of radium and X-ray to destroy the malignant cells, provided they have not become hopeless, that governed my action two years ago when I secured radium to combine with X-rays. At the present moment I am satisfied that I did the best thing. However, the knowledge we are gaining through the work of the "short wave length" therapists may determine me to put in generators of high voltage and again advance my technic. Time changes all things.

DISCUSSION

Dr. Charles Phillips, Wake Forest: I have had no experience in raduim or X-ray therapy, but wish to make several remarks about current thought as to what happens to cells under irradiation, either X-ray or radium. A great deal of experimental work has been done to determine on a experimental and clinical basis the effect of these influences on both normal and abnormal cells. Dr. Murphy, at the Rockefeller Institute, represents those workers who feel that changes are induced in surrounding tissues which in turn cause retrogression in the tumor cells, rather than these changes being directly produced in tumor cells by radium or X-ray. Probably this is not true of connective tissue tumors. Other workers believe that the rays penetrate deeply and cause death of the tumor cells *in situ*. This is somewhat like the effect of heat from the Percy cautery, and possibly electrocoagulation does the same. Here, then, are two views of the same effect. The problem, as you say, has not been settled. Experiments on animals suggest that the body is stimulated to rise to meet and destroy the tumor cells, both benign and malignant, when influenced by these radiation influences.

Dr. MacRae, closing the discussion: I would like to thank Dr. Phillips for what he said. A conception of intra-cellular effect of radiation is necessary to understand this subject.

Dr. Murphy, at Rockefeller Institute, indicates by his work that very small doses of X-rays can produce destructive effects on malignant tissues by increasing constitutional resistance. On the other hand, enormous doses of X-rays or radium may destroy so much normal tissue while the malignant lesion is being treated that the patient can not eliminate the waste nor stand the shock.

We know that in cases whose blood is good we get better results than in those whose blood shows the effect of cancerous cachexia.

It is necessary to take very good care of the patient and not overdose him with X-rays or radium.

CONSERVATISM IN OVARIAN SURGERY WITH REPORT OF 100 CASES

Robert T. Ferguson, M. D., F. A. C. S., Charlotte

When Ephraim McDowell did his first ovariotomy in the year 1809, in the pre-listerian era, he blazed the trail and marked the first milestone in ovarian surgery; and, if the legend be correct that outside the door where the operation was performed stood a guard of friends, neighbors and relatives who would attend to Ephraim in case the operation was unsuccessful, then that same weapon, if used today, might be the means of saving many an ovary that is otherwise sacrificed by inexperienced hands. You have seen and I have seen, you have removed and I have removed, ovaries that should not have been removed, and done complete oophorectomies where partial resections would have been the operation of wisdom. Dr. W. J. Mayo made a very sage remark before the recent meeting of the American College of Surgeons in Chicago to the effect that the day for "greenhorns" or inexperienced men operating had passed, and with the opportunities open to the men in the big hospitals of the country for interneships where they could learn to do surgery there was no excuse for inexperienced men operating. There was a time not so long ago when doctors learned to do surgery on their private patients by plunging, cutting, tying, removing, sewing, sweating and swearing, and the patient lived by the mercies of God and not by the skill of the surgeon. Today a man, to do surgery, must prepare himself in advance, for malpractice suits fostered by shyster lawyers are all too frequent. I wish to go on record as saying that conservative ovarian surgery is the greatest Godsend to womankind since Ephraim McDowell first demonstrated the fact that ovariotomy could be successfully performed. How many women have been subjected to a premature menopause, with its chain of distressing mental symptoms, by a double oophorectomy when a partial oophorectomy would have been a hundred per cent better, and all that was necessary. Can you imagine a more pitiful case than a woman who has been told that she would be cured by removal of her ovaries and have her come to the realization of the fact, a short time afterwards, that the post-operative state was worse than the pre-operative; that where she formerly had a mild occipital headache she now has a frontal, parietal and occipital; that where she formerly slept most of the night she

now suffers from chronic insomnia; that where she once had an occasional backache she now has a continuous backache and hot and cold flushes that send her from the torrid waves of the equator to the chilly blasts of the arctic regions; that where she could once attend to all her household duties in partial comfort now she is in the throes of misery, and she lives on and on damning you for a condition for which you are entitled to just damnation! Which is better, to remove a follicular cystic ovary which is only slightly enlarged and slightly damaged, and gives a minimum of symptoms, or tell the patient the real truth and let her drift along for a few years to her menopause, even though she is uncomfortable at times? Why not do a partial resection in these cases, when the condition justifies, and if necessity demands it later then do the complete operation when the ovaries are functionally inactive. Of course we have to make a differential diagnosis between a small cystic ovary that is giving a maximum amount of trouble and that requires removal for cure and one that does not, just as the throat specialist has to differentiate between the small tonsil that looks comparatively healthy and one that is the seat of trouble.

The ovary is one of the most important and complex organs that go to make up the female anatomy, therefore it is very important to understand the anatomy, embryology, histology and physiology of the ovary in the minutest detail in order to deal with it intelligently from a surgical standpoint. You should also form an intimate acquaintance with the nerve supply, which comes from the renal and spermatic ganglia. The fact that the ovary derives its blood supply directly from the abdominal aorta, via the ovarian artery, at once places it amongst the most important organs in the abdominal cavity, otherwise it might obtain its blood supply from some branch or anastamosis from some other pelvic organ. Of course, we know that it does have an anastamosis with the uterine after it has given branches to the ovary.

Now we come to the fountain-head of energy in the ovary, the graafin follicile, which is composed of highly specialized cells which have the power of growth under proper conditions and of moving to the surface of the ovary. Here rupture occurs during the process of ovulation, with continuation of development of the ovum when it meets the spermatozoon in the tube and becomes fertilized, later passing into the uterus, where the endometrium has been prepared for its reception, probably by the action of the secretion of the retained cells or the newly formed lutein cells of the ruptured follicle, which later go to form the corpus luteum. We know that the corpus luteum possesses several functions: it inhibits ovulation, it produces a substance which causes growth in the uterus, and we also know that removal of the ovary containing the corpus luteum of pregnancy, or particularly bi-lateral oophorectomy early in pregnancy, almost invariably results in abortion. Knowing these things we should be stimulated to greater activity in our methods of determining what is best to be done in every case of ovarian disease, and not run the risk of producing a premature menopause with its chain of undesirable symptoms until we are fully satisfied that there is no alternative.

After the graafian follicle, with its contained ovum, I believe the corpus luteum is the most important single element in the ovarian make-up, and that it has a great many controlling functions in the pelvis, and other parts of the body, that are yet occult. These latter I believe hold the controlling influence over menstruation and other forms of uterine hemorrhage. Gustav Born was the first to suggest the corpus luteum as an organ of internal secretion, and we are indebted to Fraenkel, Wallart, Leo Loeb and others for much experimental work demonstrating the physiologic function of the corpus luteum.

Endocrinology is now just in its infancy and we may expect to see astonishing results from the investigations being conducted, and when Crile's electro-chemical theory is developed to the point where the average mind can float through its fathomless depths we may expect to see a wonderful transformation in the treatment of pelvic disorders, as well as in other conditions.

I wish to report a series of one hundred comparatively recent oophorectomies which were done primarily either for relief of ovarian symptoms or in connection with other operations in the pelvis in which it was necessary to remove the ovaries also:

Cystic ovaries (simple or follicular)	28
Cystic ovaries (twisted pedicle)	2
Fibroid ovaries	2
Ovarian abscess	2
In pus tubes where the ovaries were inseparable from the mass	36
Dermoid cyst	1
Cystic ovary in connection with ruptered extrauterine pregnancy	2
Cystic ovary found in operation for phantom tumor	1
Ovaries removed in operation of hysterectomy for cancer of cervix	4
Ovaries removed in hysterectomy for uterine fibroids	20
Ovaries removed in hysterectomy for menorrhagia and hypertrophied uterus following the menopause	1
Ovaries removed in hysterectomy for extrauterine at full term	1
	100

In this series there were two deaths, one from suppression of urine in a case of double pus tubes where the ovaries were included in the abscess mass and had to be removed in a patient that was a very bad surgical risk; and the other in an advanced case of carcinoma of the cervix complicated by gall stones. This series gives a fair idea of the conditions which necessitate oophorectomy, some of which leave no choice in the method of operation, and others where considerable judgment is requisite.

Transplantation of the gonads is occupying the attention of the profession and the minds of the laity to a marked degree at the present time, and I am convinced that ovarian transplantation should be accomplished in suitable cases in the future. On a recent visit to Chicago I was very much impressed with the work being done in experimental gland transplantation by Dr. Lespinasse. Then the question is, what shall we do with the diseased ovary today? I am fully

persuaded that many ovaries have been sacrificed that should not have been; that many of us have in the past caused misery where we should have at least caused amelioration of symptoms, if not cure; and I am sure that in eighteen years of operative experience in the pelvis I have learned to be conservative when I undertake to change the syndrome caused by ovarian pathology.

DISCUSSION

Dr. Oren Moore, Charlotte: Dr. Ferguson was kind enough to ask me to lead this discussion. In my opinion Dr. Ephriam McDowell, when he did this operation with friends of the patient outside to do him hurt if he failed, would have served humanity better if he had failed. Many cases of premature menopause are caused by men who follow in his steps. It would have been better if it had not been discovered until a hundred years later that the ovary could be removed or if we had gone conservatively when we found it could be done.

We all know what the ovary is. It is comparable to the male testicle. There is nothing more easily removed than the testicle, but the doctor and patient would fight against that. We know how capable it is of regeneration in injuries and disease. If we spent as much time in the conservation of the ovary as in the male sex organ, we would have equally good results and equally as little after effect. The surgeon who has accumulated a few cases of ovarian removal and knows all the difficulties that attend these patients, is convinced that conservatism is best. Bandler, of *New York Post Graduate,* states indirectly and by implication that it is quite within the province of surgeons to remove any of the internal organs, especially the ovary, and replace the secretions by products on the market, and leads one into the error of believing that all we have to do is to have clean surgeons and then until the menopause feed the secretions. I cannot believe it and I don't believe that Bandler believes it. In this day of surgery there is no excuse for removing both ovaries except to save life in malignancy, and for no other reason.

TRANSSACRAL ANESTHESIA ASSOCIATED WITH CAUDAL BLOCK IN GYNECOLOGY AND OBSTETRICS

Thomas M. Green, M. D., Wilmington

I want to describe two procedures here. The first we call caudal block; the second is known as transsacral anesthesia. The combination of the two is known as sacral block. Caudal block is much the simpler of the two. In neither of the procedures does the anesthetic fluid reach the spinal cord, and we thus avoid the dangers of spinal anesthesia.

This procedure has been suggested in gynecology, and surgery of the perineum, the anus, in genito-urinary surgery, and recently in obstetrics.

I shall first describe the caudal block. In the caudal block procedure the patient is placed on the abdomen with a pillow under the hips and the usual cleansing of the skin over the sacrum is gone

through with. A long flexible needle with short bevel point is passed through the sacral hiatus and 30 to 60 c. c. of ½% novocain solution injected very slowly into the sacral canal. The anesthesia is apparent in 20 minutes, manifested by relaxation of the sphincter ani. When the needle has been passed high up into the sacral canal, care should be taken to see that its point is not through the dura or into a vein, in which case cerebrospinal fluid or blood will flow from the needle. Should this occur the needle should be withdrawn slightly before the injection is given. Where the caudal block procedure is used in obstetrics the patient cannot be put on the abdomen, so the injection must be made with the patient on her side. For this reason the transsacral block cannot be applied in obstetrics. The anesthesia in caudal block lasts only two hours.

The other procedure is more satisfactory still, anesthesia lasting for four hours and reaching a higher point in the pelvis. It is known as transsacral anesthesia. Formally the sacral nerves were approached by passing needles behind the rectum to the anterior sacral foramina. That has been very largely abandoned for the reason that you may puncture the rectum, and where you are dealing with cancer of the rectum it may carry cancer cells beyond the point of disease.

This procedure was found to be inferior to injection of the nerves through the posterior foramen. To accomplish the transsacral block the patient is put in the same position as for caudal block. With your forefinger passed along the crest of the ilium, locate the posterior superior spine. Then, at a point 1½ cm. below and mesial to it, we locate the point for the second sacral foramen. A little novocain, ½%, is injected in the skin here. Next, outside of each sacral cornu and lateral to the sacral hiatus, we locate the fifth foramen. Between those we raise two other wheals of novocain at equal distance, one for the fourth, and one for the third foramen. Two cm. above the second we raise a little wheal for injecting the first sacral foramen. In this way, then, we have mapped out with little wheals on the skin these five foramina, on each side of the sacrum. This sounds very difficult but it is no more so than the regular lumbar puncture. These wheals having been raised on both sides so as to have ten wheals, five on each side directly over the foramina, needles are passed through them down to the sacrum, feeling with the needle point until you find the foramen, then the needle is passed down in the canal and left there. Each foramen is thus located until we have all ten needles in place. Then we inject 6 c. c. of ½% novocain in the first, 5 in the second, 4 in the third, 3 in the fourth and 2 in the fifth, making 40 c. c. in all.

If you do the caudal block before transsacral block, by the time you finish the transsacral block the patient is ready for the operation, i. e. 20 minutes. The sphincter ani will relax, so that the anus appears to be gaping. This relaxation is also found in the perineum.

One point about post-operative attention. The patient should not be allowed to be on his sacrum until 12 hours have elapsed. Incontinence or retention may be apparent for 48 hours.

DISCUSSION

Dr. B. C. Nalle, Charlotte: This paper is of great interest, for whatever offers alleviation of the pain in childbirth is of interest to us all.

I have had no experience with the use of caudal block anesthesia in obstetrics, so I am interested to know whether this method of anesthesia, since it does not interfere with muscular contractions of the uterus, relieves or helps the pains of the first stage of labor. Even if it only helps the pains of the second stage it would be of great service, and I hope its use can be made applicable in the hands of the general obstetrician.

Dr. I. M. Procter, Raleigh: I came in too late to hear the paper, but I am much interested in the subject of relieving pain in labor. Some of the men will recall that I had a little paper in Winston-Salem and talked at Asheville, too, on this subject. I think it is one of the most important subjects confronting us today, relieving pain during labor. It is most important in that it reduces morbidity and mortality among mothers and infants as much as anything else, and in any step forward along the line of relieving women of pain during labor, so that we do not endanger the life of the child or of the mother or retard labor beyond reasonable limit, we have done something for womankind and humanity. I have had absolutely no experience with this type of anesthesia, but am much interested in it and am glad to hear the Doctor presenting the paper. I know only one other person using it, and I know this individual performed a number of versions using this form of anesthesia. I want to know if Dr. Green has used this in combination with morphin and scopolamin, which I have used considerably, modified somewhat. I find it necessary to use general anesthesia. Sometimes I use ether and sometimes chloroform in normal cases. If you can use this and get relaxation of the perineum it would be helpful in the last stages of labor. If we can use morphin and scopolamin in the first stage and the early part of the second and then use this in the latter part, we are making good progress. I find it necessary, or more practical and satisfactory, to do episiotomies in many primiparas. We get better perineum, easier labor and better functional result. I congratulate the Doctor on his paper and want to hear some more about it.

Dr. Green, closing the discussion: I have had no experience personally with caudal block in obstetrics. I am not an obstetrician. I prefixed my remarks by saying that my remarks on the obstetrical aspect of this method were largely what I had obtained from the report of the work done by Bonner and Meeker. They had hundreds of cases and their deductions I have brought into this paper because I thought they would be interesting to you. My experience with it has been limited to gynecological procedures and surgery.

First, about relief of pain. It seems to me that pain prior to the induction of caudal block could be relieved by your usual procedure of small hypodermics, which should tend to assist the anesthesia produced by the caudal block. Wannamaker seems to think

that ability to get relief from pain was in giving enough anesthetic fluid. One sacrum will take more fluid than another and it is necessary to get the fluid in under pressure. If one injection is not producing anesthesia another may be given. I do not think that we should look on it as surgical gymnastics. It really has a place, just as much so as local anesthesia has in our general surgery. Most of us prefer to operate under general anesthesia. It may be so in obstetrics. It is well to know, though, that in some cases we can abolish the general anesthetic and give this. In one case recently the patient had just become quiescent from tuberculosis and had hemorrhoids. With one caudal block I removed the hemorrhoidal mass, with no post-operative pain. This is unusual in hemorrhoid procedure, i. e., no post-operative pain. As regards the soiling of the field by relaxation of the sphincter, undoubtedly the relaxation of the bowel would allow fecal contents to pass, but I wondered if that could not be avoided by an enema, or perhaps we have that condition to deal with as a usual thing, if I remember my obstetrics right.

There is one point I forgot to mention,—these people show an inability to void for 36 hours, sometimes no desire to void. That is because of the prolongation of the anesthesia, and it may be necessary to resort to catheterization. In most cases we catheterize anyway for 48 hours after gynecological procedures, and I believe you do that in obstetrics. At the end of that time they seem to have come from under the influence of the sacral anesthetic.

DISTURBED CARBOHYDRATE METABOLISM OF PREGNANCY

Brodie C. Nalle, M. A., M. D., F. A. C. S., Charlotte

The discovery of Insulin and the brilliant results obtained from its administration have aroused in recent years more than ordinary interest in disturbed carbohydrate metabolism. A few years ago (1920) Frank and Nothman showed conclusively that pregnant women, especially in the early months, showed glycosuria without a perceptible increase in the blood sugar values, and utilized this fact as a valuable aid in the early diagnosis of pregnancy.

Various ideas have been advanced to explain the etiology of this disturbance. Corpus luteum has been suggested on the assumption that this lowered tolerance is limited to the first few months of pregnancy, and because glycosuria shows itself frequently at menstrual times. Others have suggested the chorionic villi as a possible cause. In my limited number of these cases the glycosuria has not been confined to the first few months of pregnancy, although more frequent then. Frank and Nothman claim that it is due to a lowered kidney threshold for glucose, without assigning any cause for this lowered threshold. We know that the threshold or leak point of the kidney for glucose varies very much for different individuals.

Why are there so many disturbances of metabolism in pregnancy? From personal observation these disturbances seem more frequent and more violent in the highly excitable, emotional class of women,

those in the higher stations of life and society, those who do not want to be pregnant, and who are enraged or frightened at being pregnant, than among the stoical class and those who want and at the same time are not frightened at the idea of being pregnant. Certainly disturbances of metabolism are more frequent and violent during pregnancy in human beings than in lower animals. These observations have suggested the idea of a possible explanation of disturbed carbohydrate metabolism of pregnancy through the autonomic nervous system.

First of all, it is well to recall the physiological fact that the autonomic nervous system, consisting of the sympathetic and the para-sympathetic system, is an *involuntary* system and under control of anger, fear, pain, anxiety, or *any violent emotion;* that by these emotions the sympathetic is rapidly stimulated and the cranial division of the para-sympathetic (that is, the vagus,) is inhibited.

The knowledge of the close association and interaction of the endocrine glands, the sympathetic nervous system, and the organs of reproduction is necessary for the understanding of the response of the sympathetic system to emotions. Also that the adrenals, the thyroids, and the pituitary have three features in common: the secretion of each is stimulated by the sympathetic, each lowers carbohydrate tolerance, and each acts and reacts with the reproductive organs. The adrenals co-operate with the sympathetic in every way, so that the injection of adrenalin imitates the effect of stimulating the sympathetic nerves; the thyroid aids in all metabolic activities of the sympathetic; while the pituitary plays a large part in controlling the excretion of urine.

Langdon Brown says: "With increasing civilization the threshold to pain and painful emotion becomes lowered and the resulting disabilities are exaggerated." He further says: "The evil effect of depressing emotions of anxiety, fear, pain, and anger receive an explanation when we see that through the sympathetic nervous system they can lead not only to functional disturbances but even to structural changes."

Crile has emphasized the influence of emotions on the thyroid gland, and says he has never known a case of Graves' disease to be caused by success or happiness alone or by hard physical labor unattended by psychic strain, or to be the result of energy voluntarily discharged. At Queen Charlotte's Hospital 50 per cent of pregnant women showed slight enlargement of the thyroid, and it was especially noted in primiparæ.

That glycosuria can be produced by emotional disturbances has been shown by Cannon and Fiske, who demonstrated that, out of twenty-five members of a Harvard football squad, twelve had glycosuria immediately after an exciting game. The interesting part of this is that five of these twelve men did not even participate in the game, but only witnessed it from the bench.

Langdon Brown says "temporary glycosuria is found more often in intense pain and *emotional excitement* than after violent exertion."

It has been proven by Weed, Cushing and Jacobson that the sympathetic nervous system can produce glycosuria through stimulation of the pituitary body.

Thyroid extract is known to excite glycosuria. Stimulation of the thyroid gland through the sympathetic produces glycosuria. In Graves' disease there is a lowered sugar tolerance and frequently a marked glycosuria. In myxedema we find increased sugar tolerance. Stimulation of the adrenals through the splanchnics by strong emotions produces a lowered sugar tolerance and glycosuria. We see, then, that violent or prolonged emotions stimulate the sympathetic nervous system and inhibit the cranial parasympathetic, namely the vagus, and that stimulation of the sympathetic stimulates the adrenals, thyroid and pituitary glands, and that stimulation of these glands lowers sugar tolerance and produces glycosuria. Inhibition of the vagus, through the emotions, inhibits the pancreatic secretion and thereby further lowers sugar tolerance. In other words, it has been accepted that emotional excitement of the sympathetic increases the secretion of the glands which lowers carbohydrate tolerance and inhibits the gland, that is the pancreas, which would otherwise increase carbohydrate tolerance; at the same time interfering with digestion by inhibition of digestive secretions through stimulation of the sympathetic, and interfering with the motility of the stomach and intestines through inhibition of the vagus. Now, it seems that if we can find in pregnancy sufficient emotional disturbances to start stimulation of the sympathetic, then we have a reasonable explanation of the etiology of glycosuria in pregnancy. Is not the fear, anxiety, embarrassment and possibly the anger in pregnant women equal in its effects on the sympathetic to the excitement of the football player sitting on his bench watching an exciting game, especially since the emotional disturbances in the pregnant woman are so much more prolonged and disconcerting than in the case of the football player?

Glycosuria occurs more often in primiparæ, which is suggestive, since generally they are more afraid and emotionally disturbed by the possible dangers and complications of pregnancy than those who have passed through the ordeal.

Glycosuria of pregnancy may also be explained by the stimulating effects of pregnancy on the thyroid and pituitary and adrenals, but these glands and the gonads are under the control of the sympathetic, therefore any hope of treatment must be through treatment of the sympathetic. Glycosuria of pregnancy appears to be due to a functional disturbance of the endocrine glands or reproductive organs or a loss of balance between them, either of which conditions must be due to nervous stimuli, and we know that the sympathetic supplies and controls them all, and that the sympathetic is controlled by the emotions.

Two very recent cases of glycosuria with acetone and diacetic acid, in highly emotional pregnant women, treated with bromides have shown disappearance of sugar, in spite of increased sugar intake, presumably showing that quieting the sympathetic produced a normal carbohydrate metabolism.

The effect of prolonged emotional disturbances of pregnancy would lead sooner or later to more prolonged deficient carbohydrate metabolism, and, since fat combustion is directly dependent on carbohydrate combustion, the result would be an incomplete fat combustion with the formation of acetone, diacetic acid and oxybutyric acid, a continuation of which produces acidosis, with vomiting and the consequent inability to retain foods, which condition, if prolonged, results in starvation acidosis and toxemic vomiting of pregnancy.

Futcher, in Osler's System of Medicine, says: "Some cases of diabetes seem to be due to disturbances of the autonomic nervous system."

Allen says: "The diabetic may have as good a pancreas as any one."

Crile says: "When the stock market goes down diabetes goes up."

The fact that codein diminishes the output of sugar in diabetes is very suggestive.

That glycosuria may occur in pregnant women with blood sugar normal or only slightly above normal, while in non-pregnant women blood sugar must reach .19 to .20 in order for sugar to appear in the urine, shows that the threshold of the kidney for sugar must be lowered in pregnancy. This lowered threshold is possibly explained by our same emotionally excited sympathetic.

Wearn has shown by experiments on kidneys of the frog that blood sugar is normally filtered by the glomeruli and is reabsorbed into the blood during its passage through the kidney tubules. Since emotional excitement of the sympathetic stimulates the adrenals, this increase of adrenalin would interfere with the re-absorption of sugar in the tubules, both by constriction of the blood vessels of the tubules and by raising blood pressure.

Frank and Brinnitzer have shown that adrenalin given hypodermically in 1 c. c. (1-1000) rarely produces glycosuria in a non-pregnant woman, but given to a pregnant woman produces marked glycosuria.

Langdon Brown says: "Administration of adrenalin imitates the stimulation of the sympathetic."

The adrenalin is not sufficient to produce glycosuria in the non-pregnant, non-emotionally disturbed, that is non-sympathetically excited, whereas, when given to the emotionally disturbed, it produces marked glycosuria.

Physiological stimulation of the sympathetic produces a normal output of the endocrine secretion with normal mobilization of sugar, a normal blood sugar and no glycosuria, while an emotionally disturbed sympathetic over-stimulates the pituitary, thyroid and adrenals, which results in rapid mobilization of sugar and a lowered kidney threshold and glycosuria.

The pregnant woman is on the threshold of glycosuria and only needs some emotional stimulus as anger, fear, etc., or a small additional dose of adrenalin, to produce glycosuria.

It is most fortunate and very suggestive that only recently toxemic vomiting of pregnancy and pre-operative and post-operative acidosis have been almost magically relieved by the intravenous ad-

ministration of glucose in conjunction with hypodermic use of Insulin —suggestive in the fact that there is restored to the body by this administration just what a prolonged disturbed sympathetic nervous system would have deprived it of, or just what a normally acting sympathetic system with normal intake of food would have furnished. This discovery in treatment is a wonderful blessing for the toxemic vomiting of pregnancy, and for the various acidoses, and no doubt will be universally resorted to in these cases, but the treatment is rather heroic and the administration requires a great deal of time. Why would it not be feasible, if this and other disturbances of metabolism can be attributed to emotional excitement of the sympathetic nervous system, to anticipate their occurrence by earlier treatment directed to the quieting of these emotionally disturbed patients, whether by auto-suggestion, reassurance, or by the administration of drugs which quiet the sympathetic, or by the combination of reassurance, auto-suggestion and sedative drugs?

REFERENCES

Langdon Brown: The Sympathetic Nervous System in Disease.
F. M. Allen: American Journal of Medical Sciences, 1915.
G. W. Crile: Origin and Nature of the Emotions.
R. Roubitschek: Renal Glycosuria, etc. Kdinische Wochemschrift, 1922.
Frank and Nothman: American Medical Journal.

DISCUSSION

Dr. William Allan, Charlotte: I think the facts on which this paper is based are very interesting, particularly the observation of an increased incidence of glycosuria among nervous pregnant women.

The clearing up of such glycosurias by treatment directed toward reassurance and allaying the emotions seems to me remarkable.

Dr. Nalle's suggestion that many glycosurias in pregnancy are produced by over-functioning of the endocrine glands, as a result of sympathetic nervous system stimulation from emotional disturbances, seems a reasonable explanation in the present state of our knowledge. Of course, such temporary glycosuria in patients with normal blood sugar findings must not be considered diabetes, as there is no limitation of glucose tolerance indicative of lowered pancreatic function.

Dr. I. M. Procter, Raleigh: The Doctor has given us some mighty good thoughts. I am not ready to accept his theory, because I believe that we would be doing an injury, if we accepted it at face value, to our patients, if we had to depend on psycho therapy to relieve vomiting or toxemia. I use it with most of my patients who come early with nausea or discomforts of early pregnancy to establish their confidence and make them believe that I am going to be able to help them, and I also resort to bromides, which I believe help some, but only if you get the patient in the early stage, and it is of mild type, can you do anything with that. You have to resort to more heroic methods to control the toxic symptoms. We all have tried and I am sure have gotten good effects from corpus luteum. Others have been beyond control until

they had heroic treatment with glucose and soda intravenously. This is an old subject and one on which there are many theories, and I am glad to hear the Doctor trying to work out something. We cannot accept it on its face value if we are to do our patients justice, but there are many interesting points in the paper and I am glad to hear it.

Dr. H. D. Stewart, Monroe: I think the theories the doctors have advanced relating to disturbed metabolism in pregnant women will apply to all nervous women, as well as to male hypochrondriacs.

These nervous folks, if they keep on thinking and worrying about the useless, will finally develop some pathological condition.

A woman or a man who is not of a nervous temperament, and is not self-centered, will have more resistance to disease and will recover more readily. I have observed that defectives in county homes and other similar institutions are hardly ever sick, and then only because they become chronically constipated from neglecting to respond to nature's call. It takes a certain amount of brain or nerve force to render individuals liable to certain diseases of civilized life. The idiot and the defective don't fall heir to these diseases. They are not nearly so liable to metabolic disturbances nor to acute infections. The half-idiot or the ignoramus can stand more syphilis than any other class. This is because he is the product of a line of syphilitic or alcoholic ancestors. Insane people usually have chronic constipation, but they do not habitually have such metabolic troubles as those individuals who have the power to reason and worry about their condition.

The metabolism of the body is distinctly under the control of the nervous system. It requires nerve-force renewed at regular intervals to properly direct and control the functions of the different organs of the body.

A nervous woman, pregnant or not pregnant, has various metabolic disturbances that usually do not trouble the woman with stable nerves. She is almost as hard to manage as the dope fiend. You cannot convince her that there is no serious trouble. Many nervous patients take too much medicine. If the doctor does not send them lots of medicine, they will call a humbug who will give plenty of medicine, no diagnosis and no instructions as to diet and hygiene.

Take a man of low mentality who has been badly injured. He does not think so much of dying. He does not suffer so much from shock as does the highly nervous individual who is scared almost to death and thinks he is going to die the next minute.

Once an ignorant negro tearing off slabs at a saw mill stepped upon the carriage and rode straight into the saw. His leg was split, bone and all, wide open to a point above the knee. He bled profusely and lay in a swamp for ten hours. Dr. John Blair and I had him brought to Monroe. The next day about noon Dr. Blair gave him chloroform and I amputated his leg. After all this delay he recovered and was gone in two weeks. He did not pay us nor say "thank you." A person of high mentality would probably have died from the injury and the treatment together.

The nervous system has a great deal to do with kidney trouble, and especially with glycosuria. If you keep on talking to a nervous woman about kidney trouble and keep on examining the urine, she will become sick sure enough.

Only one-tenth of all people are normal. If the doctor will keep on looking he will find something wrong with everybody.

Nervous people easily fill up with gas. The least little disturbance or excitement or loss of sleep or dissipation or fatigue will give them indigestion.

Dr. Nalle, closing the discussion: I thank you for your discussion. The statements in my paper in regard to the sympathetic nervous system; the effects of the emotions upon the sympathetic system, and the effects of the sympathetic upon the endocrine glands, etc., are facts accepted by our best known physiologists. I have attempted to show that these facts might be of some practical use in our obstetrical cases, and might possibly explain some of the disturbances of pregnancy.

The results obtained in vomiting and in cases of lowered sugar metabolism by administration of bromides have convinced me that emotional disturbances are responsible, in the way suggested in my paper, for many of the troubles of early pregnancy, and give a possible explanation for the lowered kidney threshold in pregnancy.

IS THERE SUCH A THING AS MATERNAL IMPRESSION?

Oren Moore, M. D., Charlotte

The possibility of extraneous influences leaving impressions upon the fetus while in utero, the so-called marking of children and the production of monstrosities, deformities, etc., is a subject which has long intrigued the interest of both laymen and scientists, and one which has played no small part in the happiness and activities of the gravid woman since the days of antiquity.

It is the object of this paper to analyze this subject in the light of what scientific knowledge we possess and see if there is any real ground for the numerous superstitions and beliefs which have so long disturbed the peace of mind of the expectant mother. Every physician who does obstetrics has heard of or seen cases of markings, influences, etc., which bear the mark of authenticity, at least in the mind of the narrator, and indeed to the casual observer. It is apparently true that many such cases exist, but when examined under the light of true scientific observation it is possible to prove them at the most no more than coincidence.

The student of embryology is taught that the formation of the pattern of the fetus is completed by the end of the sixth week of pregnancy and from that time until delivery the process is one of development and enlargement of this pattern. If this is true, and we know it to be so, then it is apparent that any abnormality of structure such as an accessory limb, etc., must appear before the sixth or seventh week. Therefore, if the fetus at term should possess a third leg or a sixth toe, and if this abnormality be traceable to a shock

received by the mother during the sixth, seventh or eighth month of pregnancy, then indeed the law of marking must be retroactive, which we know to be an absurdity. Now, as a matter of fact, the average woman is never sure of being pregnant until two menses have been missed, after which any abnormality of basic structure has already occurred in the fetus, and yet the shocks which women claim as the etiological factor for the subsequent deformities are in the overwhelming majority of cases of much later occurrence.

Birth marks, of course, either angioma or excessive pigmentation of skin, are, like cleft palate, harelip, spina bifida, etc., due directly to faulty cell metabolism caused by injury to the fertilized ovum or to interference with blood supply in later months, and to claim that such injuries and interferences are themselves the result of mental impressions in the mother must pre-suppose a set of physic-psychic laws which have never yet been discovered, and is, of course, worthless as a theory.

The fetus while in utero is subject to a limited variety of diseases which, together with accidents such as falls and blows which the mother may receive, cord entanglements and intra-uterine maternal disease, easily account for the majority of physical ills which are erroneously attributed to marking.

The laws which govern the formation of monsters are not understood, but we know them to be purely physical, since the offspring of animals, fowls and fish are often marked in the same way, and surely no one has ever claimed that the mental shock, grief or joy of a gravid cow has resulted in the famous two-headed calf of the dime museums, or that a common barnyard hen has been so overwrought while producing an egg that she impressed the unhatched chick to the point of endowing it with a third leg; of course not. According to the layman's idea, we must believe that the lower animals are as responsive to mental impressions and emotions as the human being, or we must abandon the theory of marking entirely. Further, if it were possible to influence the bodily structure of the unborn child by extraneous happenings, then it would be hardly possible for any child to arrive unmarked, as it is very difficult to surround any pregnant woman during the nine months of her carrying period with such a salubrious environment that no unpleasant happening could intrude.

The proponents of this theory often evokes as an argument the Biblical narrative of the manner in which Jacob got the better of his father-in-law, Laban, by erecting at the conceiving time of the cattle a system of peeled rods which so affected the beasts that all the offspring were ring-streaked and striped. My answer to this is that the Lord had promised to make a great and wealthy man of Jacob and this was one of the miraculous methods that he chose for fulfilling the contract. If anyone doubts the truth of my statement, he has only to try the experiment himself today; he may erect as many barber poles as he chooses in the rutting season; he may even go further and decorate the walls of the barns and sheepfolds with any camouflage which his fancy dictates, but he will never produce a single speciment of ring-streaked or striped sheep.

The above observations should dispose of any argument to the effect that outside happenings exert a deleterious influence upon the aspect of the fetus in utero. Now, what about the characteristics of mentality and temperament of the child? Is it possible to produce a child of unusual musical ability or artistic talent, for example, by surrounding the mother with musical instruments or works of art, by having her gaze for hours upon masterpieces of sculpture or painting, or by having her listen each day to the beautiful strains of enchanting music from the strings of hallowed violins or the throats of the world's primadonnas? Or, conversely, is it possible to produce color blindness or tone deafness in a child by virtue of the fact that the mother spends her carrying period amid the sordid and noisy settings of a crowded tenement? In answer to these questions we are bound to speak in the negative, else how can we logically explain the many musical, artistic, mathematical and military celebrities who are the offspring of the exact contradictory prenatal surroundings, or the stupid and ungifted children whose mothers spent long hours in laudable contemplation upon the esthetic and beautiful? No, we turn for the explanation of the incongruous results to the admirable and sufficient rules of heredity comprising Mendel's Law and similar scientific dictums, and not to the haphazard efforts of praise-worthy but uninformed parents. We know that literary gifts and artistic attainments, mental acumen and military astuteness, as well as moral delinquencies and mental clumsiness, are the fruits of heredity and are delivered to the individual through the medium of the chromosomes; that neither he nor his parents can add to nor subtract one cubit from the stature of the legacy by painstaking thought or laudable endeavor.

We conclude, therefore, with the statement that we can rid our own consciences and those of our expectant mothers of any burden of responsibility, either through ignorance or design, in the production of birth-marks, deformities or monstrosities.

DISCUSSION

Dr. H. D. Stewart, Monroe: Dr. Moore's essay is a beautiful paper. It will make a nice article for a magazine because there are lots of fools who will have no better sense than to believe it.

Dr. Moore undertakes to deny the fact of maternal impressions. He is the second medical man I have seen who denies the existence of a thing which all scientists acknowledge as a scientific fact.

Dr. Moore is great on assertions and short on logical basis.

A colored woman in our town became frightened at a frog one day. When her baby came it looked like a frog; cried like a frog; jumped like a frog; and was a human frog or a frog human. Under the management of an enterprising fellow the mother traveled over the world exhibiting the child, and the manager made good money.

A pregnant woman in my town ate watermelon every day while passing through a certain stage of gestation. When her baby came it had a big red piece of watermelon pictured on its back.

A pregnant woman drove up to a church one day. A half wit had one leg out of the window and the other drawn in as if cut off. She caught the picture and the impression. When the baby came it only had one leg.

In Richmond, Va., one time a pregnant woman became very much frightened by an elephant. When her baby came it had a snout, an impression of the same proboscis that had frightened its mother several months previously.

I delivered a woman who had been going to a country store often to buy snuff and candy, and to see the devil or gobbo or a small figure that opened its mouth and made a peculiar noise. When her baby came it looked like Gobbo—a maternal impression.

I think Dr. Moore often advances theories or ideas just to stimulate or elicit discussion or argument. He always was good at that. If it were not for maternal impression no one would ever favor his mother nor be like her in character and the world might never know whence he sprang nor what made him such a specimen of the race.

WOMAN'S AUXILIARY

TO THE

MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

The Woman's Auxiliary to the Medical Society of the State of North Carolina held its Second Annual Meeting on April 16, 1924, in the Hotel Sir Walter, Raleigh, with thirteen members from last year present and thirty-five new members added to the roll.

Mrs. J. Howell Way, Vice-President, opened the meeting with the Lord's Prayer and after a few well chosen remarks turned it over to Mrs. I. W. Faison, President-elect from last year. Mrs. Chas. O'H. Laughinghouse was appointed secretary *pro tem.*

Mrs. C. A. Shore welcomed the Auxiliary to Raleigh and Mrs. J. S. Milliken, Southern Pines, responded to her address.

Mrs. Faison then introduced Mrs. T. W. Bickett, who told of the Mother's Aid work in the state, and paid a beautiful tribute to the "country doctor". Her address was followed by several musical numbers by Mrs. Dearstyne, accompanied by Mrs. Staudt.

A motion to make the dues $1.00 per year was made and passed.

Mrs. Blair, corresponding secretary, was instructed to write a letter of condolence to the family of Mrs. A. A. Kent, Councilor from the Ninth District, who died April 11, 1924.

The corresponding secretary was also asked to write Mrs. S. C. Red, of Houston, Texas, President of the Woman's Auxiliary to the American Medical Association, who had been with the auxiliary at its organization, telling her of the success of this meeting and thanking her for the inspiration she brought to us last year.

It was decided to send a telegram of congratulations to our President, Mrs. P. P. McCain on the birth of a daughter a few days previous.

The election of officers came next and the following were unanimously elected:

President-Elect ..... Mrs. J. Howell Way, Waynesville
First Vice-President ..... Mrs. R. S. McGeachy, Kinston
Second Vice-President ..... Mrs. C. A. Shore, Raleigh
Third Vice-President ..... Mrs. John Q. Myers, Charlotte
Recording Secretary ..... Mrs. W. S. Rankin, Raleigh (305 Forest Road)
Corresponding Secretary ..... Mrs. A. McN. Blair, Southern Pines
Treasurer ..... Mrs. W. L. Jackson, High Point (800 N. Main Street)

LIST OF CHARTER MEMBERS

Ashby, Mrs. E. C. ..... Mount Airy
Ashworth, Mrs. B. L. ..... Marion

Blair, Mrs. A. McNiel ..... Southern Pines
Bulla, Mrs. A. C. ..... Raleigh
Bullock, Mrs. Jack H. ..... Oxford

Carter, Mrs. Paul C. ..... Weldon

Choate, Mrs. B. O. ..... Sparta
Choate, Mrs. G. W. ..... Salisbury
Compton, Mrs. B. S. ..... Oteen
Craven, Mrs. T. C. ..... Ramseur

Dixon, Mrs. H. Carlyle ..... Madison

Faison, Mrs. I. W. ..... Charlotte

LIST OF CHARTER MEMBERS

Gold, Mrs. Charles F.....Ellenboro

Harden, Mrs. Graham.....Burlington
Hocutt, Mrs. Battle A.....Clayton
Holt, Mrs. W. P.....Duke

Jackson, Mrs. W. L.....High Point
Johnson, Mrs. T. C.....Lumberton

Keiger, Mrs. James A.....Greensboro
Kendricks, Mrs. R. C.....Elizabeth City
Kent, Mrs. A. A.....Lenoir

Lawrence, Mrs. B. J.....Raleigh
Linney, Mrs. R. Z.....Charlotte
Linville, Mrs. A. Y.....Winston-Salem
Long, Mrs. E. F.....Raleigh
Long, Mrs. John W.....Greensboro

McBrayer, Mrs. R.....Shelby
McCain, Mrs. P. P.....Sanatorium
MacConnell, Mrs. John W.....Davidson
McGeachy, Mrs. Hettie W.....Kinston
McGoughan, Mrs. J. V.....Fayetteville
McNairy, Mrs. C. Banks.....Kinston
McPhaul, Mrs. W. A.....Charlotte

MacRae, Mrs. John D.....Asheville

Milliken, Mrs. J. S.....Southern Pines
Mitchell, Mrs. R. C.....Raleigh
Moore, Mrs. Charles E.....Greensboro
Moore, Mrs. K. C.....Wilson
Murphy, Mrs. J. Gerald.....Wilmington
Myers, Mrs. John Q.....Charlotte

Nisbet, Mrs. D. Heath.....Charlotte

Ray, Mrs. John B.....Leaksville
Red, Mrs. S. C.....Houston, Texas
Redwine, Miss Edith.....Asheville
Russell, Mrs. Charles R., Granite Falls

Sevier, Mrs. D. E.....Asheville
Sevier, Mrs. J. T.....Asheville
Sloan, Mrs. H. L.....Charlotte
Starr, Mrs. H. F.....Greensboro
Strong, Mrs. C. M.....Charlotte

Watkins, Mrs. Geo. T., Jr.....Durham
Way, Mrs. J. Howell.....Waynesville
Worthington, Mrs. Frank D., Charlotte

LIST OF MEMBERS JOINING AT 1924 MEETING

Ashworth, Mrs. W. C.....Greensboro

Broughton, Mrs. N. B., Jr.....Raleigh
Bowman, Mrs. E. L.....McDonald

Clodfelter, Mrs. C. M.....Lexington
Cole, Mrs. W. F.....Greensboro
Cooke, Mrs. G. C.....Winston-Salem
Cooper, Mrs. G. M.....Raleigh
Crowell, Mrs. L. A.....Lincolnton

Dickie, Mrs. J. W.....Southern Pines

Hester, Mrs. J. R.....Knightdale
Hicks, Mrs. V. M.....Raleigh
Holloway, Mrs. O. W.....Durham

Lattimore, Mrs. E. B.....Shelby
Laughinghouse, Mrs. Chas. O'H. Greenville
Lawrence, Mrs. T. B.....Fuquay Springs

McGee, Mrs. J. W.....Raleigh
Mudgett, Mrs. W. C.....Southern Pines

Paddison, Mrs. J. R.....Kernersville
Peeler, Mrs. C. N.....Charlotte

Rainey, Mrs. W. T.....Fayetteville
Rankin, Mrs. W. S.....Raleigh
Register, Mrs. F. M.....Raleigh
Rogers, Mrs. J. R.....Raleigh
Rozier, Mrs. R. G.....St. Paul

Sadler, Mrs. R. C.....Whiteville
Scruggs, Mrs. Wm. M.....Charlotte
Sharpe, Mrs. C. R.....Lexington
Shore, Mrs. C. A.....Raleigh
Speas, Mrs. D. C.....Winston-Salem
Sutton, Mrs. W. G.....Seven Springs

Verdery, Mrs. W. C.....Fayetteville

Wilkerson, Mrs. Chas. B.....Raleigh

NORTH CAROLINA STATE SECTION
OF THE
AMERICAN COLLEGE OF SURGEONS

FELLOWSHIP PLEDGE

Recognizing that the American College of Surgeons seeks to develop, exemplify, and enforce the highest traditions of our calling, I hereby pledge myself, as a condition of Fellowship in the College, to live in strict accordance with all its principles, declarations, and regulations. In particular, I pledge myself to pursue the practice of surgery with thorough self-restraint and to place the welfare of my patients above all else; to advance constantly in knowledge by the study of surgical literature, the instruction of eminent teachers, interchange of opinion among associates, and attendance on the important societies and clinics; to regard scrupulously the interests of my professional brothers and seek their counsel when in doubt of my own judgment; to render willing help to my colleagues and to give freely my services to the needy. Moreover, I pledge myself, so far as I am able, to avoid the sins of selfishness; to shun unwarranted publicity, dishonest money-seeking and commercialism as disgraceful to our profession; to refuse utterly all money trades with consultants, practitioners or others; to teach the patient his financial duty to the physician and to expect the practitioner to obtain his compensation directly from the patient; to make my fees commensurate with the service rendered and with the patient's rights; and to avoid discrediting my associates by taking unwarranted compensation. Finally, I pledge myself to co-operate in advancing and extending, by every lawful means within my power, the influence of the American College of Surgeons.

AMERICAN COLLEGE OF SURGEONS

ALBERT J. OCHSNER, Chicago
President

ERNST A. SOMMER, Portland
First Vice-President

FRANKLIN H. MARTIN, Chicago
Director General

CHARLES H. MAYO, Rochester
President-Elect

FREDERICK N. G. STARR, Toronto
Second Vice-President

CHARLES E. KAHLKE, Chicago
Treasurer

ASSOCIATE DIRECTORS

ALLAN CRAIG M. T. MACEACHERN E. I. SALISBURY

BOARD OF REGENTS

Walter W. Chipman, Montreal
George W. Crile, Cleveland
James B. Eagleson, Seattle
John M. T. Finney, Baltimore
Jasper Halpenny, Winnipeg
Merritte W. Ireland, Washington
Daniel F. Jones, Boston
Allen B. Kanavel, Chicago
Arthur A. Law, Minneapolis
Franklin H. Martin, Chicago
Charles H. Mayo, Rochester
Frederick W. Parham, New Orleans
Charles H. Peck, New York
Alexander Primrose, Toronto
George E. de Schweinitz, Philadelphia
J. Bentley Squier, New York

NORTH CAROLINA STATE SECTION

President ..... Dr. John T. Burrus, High Point
Secretary and Treasurer ..... Dr. John Wesley Long, Greensboro

EXECUTIVE COMMITTEE

Dr. John T. Burrus, *Chairman* ..... High Point
Dr. C. M. Strong, *Councilor* ..... Charlotte
Dr. John W. Long, *Secretary* ..... Greensboro

JUDICIAL ADVISORY COMMITTEE ON LOCAL AFFAIRS

Dr. Lester A. Crowell, *Chairman* ..... Lincolnton
Dr. Arthur T. Pritchard ..... Asheville
Dr. Chas. W. Banner ..... Greensboro
Dr. Claude O. Abernethy ..... Raleigh
Dr. David T. Tayloe ..... Washington

NORTH CAROLINA FELLOWS OF THE AMERICAN COLLEGE OF SURGEONS

ASHEVILLE

Henry H. Briggs
Marshall Hall Fletcher
Eugene Byron Glenn*
Joseph B. Greene
Franklin Webb Griffith
William Pinkney Herbert
Robert Robbins Ivey
James Madison Lynch
Arthur T. Pritchard

CHARLOTTE

Addison G. Brenizer
A. J. Crowell
Robert Thrift Ferguson
Robert Lardner Gibbon
James Pleasant Matheson
Oscar L. Miller
Oren Moore
Alonzo Myers
Brodie Crump Nalle
Robert W. Petrie
George William Pressly
William Marvin Scruggs
Charles Moore Strong
S. Raymond Thompson
Albert M. Whisnant

CONCORD

Paul R. MacFadyen

DURHAM

Numa Duncan Bitting
Lyle Steele Booker
S. D. McPherson
Foy Roberson

FAYETTEVILLE

Jacob Franklin Highsmith

FRANKLIN

Samuel Harley Lyle

GASTONIA

Lucius Newton Glenn

GREENSBORO

C. W. Banner
Walter F. Cole
Parran Jarboe
John Wesley Long
Herbert Hammond Ogburn
James W. Tankersley

GREENVILLE

Elijah Thomas Dickinson

HICKORY

Jacob H. Shuford

HIGH POINT
John T. Burrus
David A. Stanton

KINSTON
Albert D. Parrott
James Marion Parrott

LINCOLNTON
Lester A. Crowell

NEW BERN
Richard N. Duffy

RALEIGH
Claude Oliver Abernethy
Hubert Ashley Royster
Louis Nelson West
John B. Wright

ROCKY MOUNT
Edmund S. Boice
Byrd C. Willis

RUTHERFORDTON
Montgomery Herman Biggs
Robert Hope Crawford
Henry Norris

SALISBURY
James Ernest Stokes

SANFORD
J. P. Monroe

STATESVILLE
James Wagner Davis
Henry F. Long

TARBORO
Julian M. Baker
Samuel Newbern Harrell

WASHINGTON
David Thomas Tayloe

WILMINGTON
Thomas Meares Green
J. Gerald Murphy
James Farish Robertson, Jr.
Robert Barnard Slocum

WILSON
B. S. Herring
Charles A. Woodard

WINSTON-SALEM
Thomas W. Davis
Charles Solomon Lawrence
Everett A. Lockett
Arthur de Talma Valk

*Deceased

APRIL 15, 1924

SIR WALTER HOTEL, RALEIGH

The meeting of the North Carolina State Section of the American College of Surgeons was called to order by Dr. John T. Burrus, Chairman of the Executive Committee, at the above time and place.

The roll call was dispensed with by consent.

The report of the State Executive Committee was called for, and through its Secretary, Dr. J. W. Long, the committee submitted the following:

The last session of the North and South Carolina Section of the American College of Surgeons was held at Winston-Salem, N. C., February 3-4, 1924. Under the leadership of Dr. A. E. Lockett, chairman, ably assisted by his fellow-members of the Committee of Arrangements, Drs. C. S. Lawrence, T. W. Davis, and A. de Talma Valk, a most successful meeting was held. The session lasted for two days and consisted of: (a) hospital conference under the direction of Dr. Malcom T. MacEachern, Director of Hospital Activities, American College of Surgeons; (b) scientific session at which a number of able papers and demonstrations were presented; (c) clinics at the new Baptist Hospital, Dr. Lawrence's Hospital and the City Memorial Hospital; (d) public meeting presided over by Dr. A. J. Crowell, chairman of the executive committee, at which several distinguished guests, including Surgeon General M. W. Ireland, U. S. A., delivered addresses; and (c) the Annual Meeting of Fellows, held by each state separately.

At the Annual Meeting of the North Carolina Fellows certain important items of business were transacted, among them being the following:

1. Election of the Executive Committee for the current year, consisting of Dr. John T. Burrus, chairman; Dr. C. M. Strong, councilor; Dr. J. W. Long, secretary.

2. The presentation of a plan by Dr. Allan Craig, Director of State and Provincial Activities of the A. C. S., whereby each state and province is to be organized into a Section.

Dr. Craig stated that the college had already adopted the scheme, as had many of the states and provinces. The North Carolina Section promptly endorsed the plan.

3. The scheme provides for a Judiciary Advisory Committee on Local Affairs. The following were elected on this committee: Dr. Lester A. Crowell, Chairman; Dr. Arthur T. Pritchard, Dr. Chas. W. Banner, Dr. Claude O. Abernathy, Dr. David T. Tayloe.

The Secretary will ask Dr. C. W. Banner to read the "General Outline for State Sections and Judicial Committees" as formulated by the College and endorsed by the Winston-Salem meeting.

Dr. Banner reads as follows:

GENERAL OUTLINE FOR STATE SECTIONS
AND JUDICIAL COMMITTEES

First: The organization in each state of the Fellows of the College of that state, this organization to be called "State Section of the American College of Surgeons" in order that there be no confusion between the name of the College organization and the State Medical Society.

Second: It will be permissible for the State Section to suggest local groups in the larger towns and groups where there are no large towns (a combination of counties, for example), these local groups to be called "Local Chapter," i. e., The Fort Wayne Chapter of the American College of Surgeons.

Third: The appointing by the State Section of a committee of from three to five members, this committee to elect its own chairman and the committee to be known as the Advisory Committee on Local Affairs. When complaints are filed in the Central Office of unethical or other unfavorable conduct on the part of any of its members the local committee will be notified and asked to make an informal investigation of the rumors, and report its findings to the Central Office, where it will be submitted to a Central Judicial Committee. The local Advisory Committee also will be in a position to take initiative where information derogatory to a member is brought before it. The local Advisory Committee should submit all its recommendations to the Central Judicial Committee.

Fourth: The Central Judicial Committee will be appointed by the Board of Regents from among the Fellows of the College and will he headed by the Attorney of the College. The Central Committee will meet at least once a year, immediately preceding the annual meeting of the Clinical Congress, to carefully consider all problems that are properly prescribed to it and make its recommendation to the Board of Regents.

Fifth: The Advisory Committees of the various states must in no way make definite charges against Fellows of the College which would involve the members of the Committee in criminal prosecution.

Dr. Banner continuing said:

It has been said that "necessity is the mother of invention," and this applies no doubt to the work of the American College of Surgeons. As the work progresses, its needs become apparent, and it is this need that has caused the appointment of the Central Judicial Committee.

In the outline of the work for the Judicial Advisory Committee, as passed by the Board of Regents, they give us five divisions of the work. The first one, in regard to organizing state sections of the Fellows, has already been attended to in this state; in fact, I believe we were the first state to so organize. Now all the states, I think, have organized either singly or in groups.

The second article, in regard to local groups, hardly needs consideration at this time, as I think there are not enough members in

any one locality to justify such organization; in fact, I think this was intended for larger cities than we yet have in North Carolina.

The third article, regarding the appointment and the functioning of the advisory committee, seems to me the one most important for our consideration at this time. I want to say in the first place that I rather like the name of this committee—*Advisory* Committee, not investigating committee. If you have been reading the papers recently, I think you will be pretty well disgusted with the work of most of the recent investigating committees, but the work of a recent advisory committee headed by Brig. General Dawes has really seemed to have accomplished something worth while. So I repeat that I am pleased that our committee has been called an Advisory Committee and not an investigating committee.

In every organization, in any line of business or profession, with a membership as large as is now represented by the American College of Surgeons there will be some unworthy members taken in, and also there will be some who start out all right but who, from force of circumstances or from innate weakness, will do what we Methodist call "falling from grace," and, as I understand, it is the work of the Central Judicial Committee to either bring them into line or else see that they are relieved of their membership in this body. No man who lives up to the standard set in our Fellowship Pledge can do questionable things, and no man who, having signed this pledge, is guilty of doing a questionable act, is entitled to membership in this organization.

One can readily understand how difficult or impossible the work of the Central Judicial Committee would be if they did not have the co-operation of the membership in the different parts of the country, and I have no doubt that it was with this idea in mind that the Board of Regents advises the appointment of an Advisory Committee in the different sections of the country, to help the General Judicial Committee in their investigation of any charges that might be brought against a Fellow of the College. Local men are in better position to get at the facts and, if unprejudiced, to pass judgment on any offender. They usually know the character of the offender and also of the ones who bring the charges, and are thus better able to judge the offense and the circumstances under which said offense was committed. Happily in North Carolina I think we shall have little need for the work of this committee. I remember on one occasion I was called upon to take a patient to a private hospital for the insane; after we reached the place and the patient was delivered to the institution, the superintendent, as he locked the man in, explained to him that the lock was not intended for him at all but was for those other fellows. So I think the work of this committee was not intended for us in North Carolina but for the other fellows. Happily for us, we have never been troubled much in this section by fee-splitting, by criminal operations, exorbitant charges or any of the grosser crimes that have crept into the profession in some parts of the country.

The fourth article relates to the manner of appointing the Central Judicial Committee and their work, and needs no consideration at our hands.

The fifth article seems to me rather indefinite and not quite complete and I believe would be better covered by revision about as follows: The advisory committees of the various states must in no way make definite charges against fellows of the college that would reflect on their personal character or their professional standing as physicians unless they have sufficient evidence to protect themselves and the college against a criminal prosecution if such proceedings should be brought by the party under charges.

It also occurs to me that a sixth article should be added requiring the Judicial Advisory Committee to have an annual meeting at the same time and place as the state sectional meeting for the consideration of such matters as may be brought before it, and also to make a report to the state sectional meetings of any matters which in their judgment should be so reported.

Dr. Long: The reörganization of the Fellows into a State Section as proposed by the College, and as read by Dr. Banner, was unanimously adopted at the Winston-Salem meeting. Because of the lack of time and the stress of other matters, the organization was not entirely completed; therefore, it is proper for us to finish the excellent work by formally declaring this body to be the "North Carolina State Section of the American College of Surgeons," and proceed to the election of officers and such other business as may come before us. I feel that whatever we may do this evening will be an indorsement and continuation of the Winston-Salem meeting.

As a matter of fact, the history of which is on record, the North Carolina Fellows of the American College of Surgeons organized a State Section at Asheville, North Carolina, on November 12, 1919. The American College of Surgeons has recognized this organization. Therefore, we may truly say that our State Section is six years old, this being the sixth year of its existence. During the six years we have held eight meetings. The second meeting was held in Charlotte, April 21, 1920; the third in Greensboro, May 17, 1920; the fourth in Charlotte January 20, 1921; the fifth in Asheville, March 20, 1922; the sixth in Columbia, S. C., February 1, 1923; the seventh in Winston-Salem, February 4, 1924, and the eighth in Raleigh, April 15, 1924. Our present organization, while under a little different form, is simply a continuation of the organization that has been in existence six years.

This is history and North Carolina should not forget it!

On motion, duly seconded and unanimously carried, it was resolved: That this meeting do hereby ratify the action of the Winston-Salem meeting, February 4, 1924, in reference to the North Carolina Section of the American College of Surgeons.

The Secretary: It is now in order to elect a President, Secretary and Treasurer.

Dr. L. A. Crowell, Lincolnton: I thought the chairman of the executive committee was the chairman of the state section of the American College of Surgeons.

Dr. Long: Not unless he be so elected. You can elect him to that office if you so desire.

Dr. W. F. Cole, Greensboro: I move that the chairman and the secretary of the executive committee be made the President and Secretary of this organization; and that this be our permanent policy.

Seconded by Dr. A. M. Whisnant, carried and was so ordered.

HISTORY OF THE JUNIOR CANDIDATE GROUP

H. W. McKay, M. D., Charlotte

I have been asked to give a brief history of the Junior Candidate Group of the American College of Surgeons. In the March, 1923, issue of Southern Medicine and Surgery there appeared an article by Dr. J. W. Long of Greensboro proposing the formation of a pre-collegiate organization, the purpose of which was to prepare and educate candidates for admission into the College. It was originally intended that each state and province have a separate organization, with its own officers, all of these bodies, however, to be under the absolute control of the College.

The name that Dr. Long proposed tentatively for the organization was the Candidate School for Fellowship in the American College of Surgeons.

On the 16th of April, 1923, at the Asheville meeting of the State Medical Society, a meeting of the Fellows was convened to consider the proposed organization. After the matter was presented to the meeting by Dr. Long, Dr. D. A. Stanton presiding and myself acting as secretary, the plan was unanimously adopted. Dr. Long stated frankly that the plan had not been adopted by the American College of Surgeons, but that it was confidently believed that when the opportunity came to present the scheme to the Board of Regents that it would be adopted on its merits.

Dr. Long also embodied the proposition in his presidential address before the State Medical Society, April, 1923; and the scheme was unqualifiedly endorsed by the House of Delegates and the State Medical Society in general session.

The Fellows of the College in the state, having authorized the scheme, with a group of men who desired to become candidates, proceeded on the evening of April 17, 1923, at the Kenilworth Inn, Asheville, N. C., to organize the North Carolina Candidate School for Fellows in the American College of Surgeons. Dr. C. A. Julian, Thomasville, was elected president, and Dr. H. W. McKay, Charlotte, secretary. Thirty-nine candidates joined the organization.

On the invitation of Dr. Franklin H. Martin, Director-General, Dr. Long went to Chicago and presented the matter to the Board of

Regents, October 23, 1924. The plan was favorably received and Dr. Long was asked by the Board of Regents to meet with the Executive Committee of the Board at White Sulphur Springs, West Virginia, December 15, 1924.

The Executive Committee, after hearing Dr. Long, unanimously endorsed the scheme and referred the matter back to the Chicago office to work out the details.

The pamphlet I hold in my hand and which I will submit is a part of this report embodying the plan of organization of the Junior Candidate Group, being the name finally adopted by the college.

PLAN FOR THE ORGANIZATION OF A JUNIOR CANDIDATE GROUP

It has long been felt by the Board of Regents that the American College of Surgeons has failed to make any provision whereby its ideals might be imparted and assistance extended to the young prospective surgeon from the time of his interneship through the seven years of surgical practice which he must pursue before he is eligible for Fellowship in the College, really the formative years of his career when the temptation to commercialize his practice is most pronounced. Accordingly, at a recent meeting, it was proposed to organize a Junior Candidate Group which would make it possible for the College to take under its wing for guidance these men from the very beginning of their careers, and the following plan was adopted.

THE PLAN

I. In establishing a Junior Candidate Group of prospective Fellows of the College, it is proposed that these candidates be accepted and placed on a probationary list as early as two years after graduation, with the understanding that they be acceptable as Fellows not earlier than seven years after graduation, and subject to the present provision of the filing of one hundred case records as evidence of their professional qualifications; that the applicants for appointment as candidates shall fill out and sign the same application blank together with the anti-fee splitting pledge as is required of all Fellows admitted to the College.

These young men during their probationary period shall file annually, on carefully prepared blanks provided by the College, a summary of their activities for each year of the probationary period. All of these data will be placed on file and become a part of the application papers of the candidate and will have a bearing upon his acceptance later as a Fellow of the College.

II. Applicants for membership in this group whose papers have been properly filed and whose applications have been approved, shall be known as Junior Candidates for Fellowship in the American College of Surgeons and shall be termed members of the "Junior Candidate Group of the American College of Surgeons." They shall be eligible for Associate Membership in their respective State or Provincial Sections or Chapters of the College.

III. Any legalized practitioner of medicine who has been graduated from an approved medical school for a minimum period of two years and who expects to specialize in surgery or some branch of surgery may apply for membership in the Junior Candidate Group. A prospective candidate may personally ask to

have his name filed in the Central Office of the College, or such request may be made in his behalf by a member of the medical profession who is in good standing.

IV. If an applicant for enrollment is vouched for by a Fellow of the College, an application blank and declaration of principles shall be forwarded to him, with the request that they be filled out, signed, and returned to the office of the College. His application will then be submitted for consideration at the first succeeding meeting of his respective State or Provincial Credentials Committee. If an applicant for enrollment is not vouched for by a Fellow of the College, either at the time the request is filed or subsequently by correspondence with the Central Office, the communication shall be acknowledged and his name submitted for consideration at the first succeeding meeting of his respective State or Provincial Credentials Committee. If his name is then approved, the applicant shall be notified that he has been recorded as a member of the Junior Candidate Group for Fellowship in the American College of Surgeons, and will be forwarded regular application blank.

V. The Blue Book of the College shall contain a special section under the heading "Junior Candidate Group," in which shall be included the names of all those who have qualified. These shall be classified under their respective states, provinces, and countries.

VI. Candidates shall be exempt from all fees or dues until admitted to full Fellowship in the American College of Surgeons, when the regulation Fellowship fee of $100 and annual dues of $25 will become due.

PRIVILEGES AND DUTIES OF CANDIDATES

I. Each candidate shall be known as a member of the Junior Candidate Group of the American College of Surgeons.

II. A candidate shall remain a member of the Junior Candidate Group while he continues to develop a specialty of surgery and until he is eligible for Fellowship in the College, and has filed acceptable case records as evidence of his surgical qualifications. If for any reason a candidate finally fails to qualify as a Fellow, he shall be notified and dropped from the list of candidates.

III. The bulletins issued by the College and other literature pertaining to its activities shall be sent to each candidate.

IV. Candidates shall become Associate Members of the State and Provincial Sections or Chapters of the American College of Surgeons which may be organized in the various states, provinces, and countries of which Fellows of the College shall be active members. They shall also be eligible to attend the annual and sectional meetings of the Clinical Congress of the American College of Surgeons.

V. In his private and professional life each candidate shall be required to carry out all of the requirements of the American College of Surgeons with the same degree of fidelity that is expected of the Fellows of the College.

SOURCES FROM WHICH CANDIDATES WILL BE DRAWN

I. Groups of graduate internes from approved hospitals.

II. Junior members serving as assistants or associates of surgeons, selected from approved hospital staffs.

III. Associate teachers of surgery and surgical specialties in medical faculties of approved medical schools.

IV. Younger men practicing surgery independently in the cities and smaller communities.

METHOD OF PROCEDURE IN REACHING THE JUNIOR SURGEONS ELIGIBLE FOR THIS CANDIDATE GROUP

I. By correspondence between the Central Office and Fellows of the College.

II. By recommendations by the Credentials Committees of the states, provinces, and countries.

III. By nominations made at formal sectional meetings of the College.

IV. By correspondence with chiefs of surgical staffs of approved hospitals.

V. By correspondence with Deans of Class A medical schools.

VI. Through lectures delivered by senior surgeons of approved medical schools who are Fellows of the College to the graduating classes and groups of internes in their respective hospitals.

Dr. McKay continuing said:

Now what does the College expect of a man who gains admission to the Junior Candidate Group? It requires all of him that it does of a Fellow of the American College of Surgeons, namely, that he shall submit annually a summary of his surgical endeavors during that year; that he shall live up to the ethical standards set forth by the A. C. S.; he can participate in any state, sectional or national meeting of the A. C. S.; in other words, he is made an associate member of his state or provincial section of the A. C. S.; he has all the privileges except that of full fellowship, and he is exempt from paying dues. Now, gentlemen, I believe with Victor Hugo, who said that common sense was the most uncommon thing. An organization like this is based on common sense. Is there need of such an organization, is it practical? I ask you to consider this organization from this standpoint. How far would we get today in modern medical education or in organization of modern hospital teaching staffs if the young surgeon or physician did not have a definite place in that organization? If you get my point, in the teaching staff the chief has an associate in medicine, and associate in surgery; or the teacher in the institution has an associate professor or instructor; so what the American College of Surgeons has done is to give a definite place to the young surgeon who looks forward to Fellowship. It has extended the right hand of fellowship and has said to the young surgeon, "Come in and enjoy the privileges of the A. C. S.; serve your probationary period, if your practice and standards are ethical, if you pass your examination satisfactorily, you may look forward to a Fellowship."

I think it should be made plain that membership in this organization is no guarantee of Fellowship in the A. C. S. As I have been asked to say a few words about the organization of this Junior Candidate Group, I can only say that I think that the young surgeons of North Carolina are under many obligations to Dr. Long, because this is his idea, and, as I understand it, he has made it possible not only for the younger members of this state to enjoy the

privileges I have tried to enumerate, but this plan has already been accepted in twenty or more states and will undoubtedly extend over the western hemisphere.

DISCUSSION

THE PRESIDENT: This paper is open for discussion. I would just like to say, before the discussion is opened by Dr. J. M. Parrott, that we should congratulate ourselves that through this idea of Dr. Long's, which is inclusive rather than exclusive, that we have not only been enabled to get this kind of organization for North Carolina but that it applies to the entire western hemisphere. I think it well that we should discuss it freely at this time.

DR. J. M. PARROT, Kinston: There are two or three things that we ought to remember about the important matter presented by Dr. McKay, one of which has hardly been emphasized enough by the doctor: and that is the matter of state pride. Incidentally, we have to begin to claim things in North Carolina in justice to ourselves. The idea of the Junior Candidate Group was conceived by our distinguished leader Dr. Long. I told him at the Asheville meeting that if he did not lay hold of the proposition and hold it fast our friends in Chicago might claim it; and sure enough they are promulgating it as part of their program without giving Dr. Long credit for it. Suffice it to say that this plan has met the approval of those in Chicago whom we recognize as the authorities of the A. C. S., and the movement is now on. I shall content myself by saying that in my judgment it is a matter of great importance to our younger men. A few years ago we had organized in North Carolina a group that was of great value, which, by the way, was also one of Dr. Long's ideas, which we denominated the North Carolina Surgical Club, and which grew so large that it had to be divided into two sections, east and west; and we went on trips and enjoyed them very much and were immensely benefited by them. We were congratulated at various points by distinguished surgeons on account of the program. I think we could adopt that plan in managing our Junior Candidate Group, with a great deal of benefit. If we could revive that custom, begin again making our itineraries, inviting and taking with us the members of the Candidate School, it would be a great benefit to them in a professional way. I hope that our younger men will take advantage of the opportunity which is presented by this unique and very, very valuable plan. I shall not discuss the details, because that has been very clearly stated by Dr. McKay. I shall content myself by suggesting that the State of North Carolina has already grown in a professional way to that point where we could organize an inter-state itinerary and meet in Raleigh and visit Greensboro, Charlotte, Asheville, High Point, Winston-Salem, Durham and other places with a great deal of benefit to ourselves. I really think we can get a great deal out of it.

DR. LONG: I would like to say that I appreciate the remarks of Drs. Burrus, McKay and Parrot; but as for getting personal credit out of the matter I am rather indifferent. I am satisfied to know that a

way has been provided whereby the younger men in the profession have an open door through which they can enter the American College of Surgeons. I do have enough state pride, however, to desire that North Carolina gets the credit for originating and inaugurating the plan, which is proving to be one of the greatest things that the College has adopted. In fact, it has been freely stated by members of the Board of Regents and other officers of the A. C. S. that it is only a question of a few years when the *Junior Candidate Group will be the only avenue of approach to Fellowship in the College.* Now that certainly ought to be enough gratification for any man, whether they give him credit for it or not. I do want to call attention to this wonderful opportunity that is given to the younger men. I shall not confine it to young surgeons, but include all young men who wish to become surgeons or surgical specialists; because the College says to them in substance: "If you want to join these State Sections such as this is, you will be recognized as an Associate Member; you will be privileged to attend not only these meetings but the sectional meetings and convocations of the College itself; your name will be put in the Blue Book* which the College publishes each year containing the year's work, names of all Fellows and much other valuable information. They will be sent a copy each year; also a copy of all literature put out by the College, and *it will not cost them a single cent.* Can you imagine a thing that is more inviting to an ambitious young surgeon than to be treated in this way? I regard it as a wonderful thing for any young man who wants to ultimately become a Fellow in the A. C. S.

In order that history may be kept straight, I desire to embody in the minutes of this meeting, a copy of my address before the Executive Committee of the Board of Regents of the College, delivered at White Sulphur Springs.

ADDRESS BEFORE THE EXECUTIVE COMMITTEE OF THE BOARD OF REGENTS, AMERICAN COLLEGE OF SURGEONS

John Wesley Long, M. D.

White Sulphur Springs, W. Va., December 11, 1923

Mr. President and Members of the Executive Committee:

I say it modestly, but the matter I wish to present to you today is the most important question that has come before you since the inception of the College itself. I take it that most of you gentlemen are farmers, or at least agriculturists; there is a difference. I wish to discuss with you the question of seed-corn, without which any farmer would be sadly handicapped.

On the invitation of Dr. Franklin H. Martin, your Director-General, I presented this matter before the Board of Regents at its last Chicago meeting, October 23rd of this year. The subject was favorably received and was referred to your committee at this time and place for final consideration.

*Later, the College decided not to publish the names of Associate Members in the Blue Book.

Dr. Martin asked me to re-read my Chicago address, which I shall proceed to do, leaving out such portions as are irrelevant at this time and modifying certain other parts which, I am persuaded after a conference with Dr. Martin, may be improved.

Before proceeding further, I wish to state that this is not a scheme emanating from Dr. Martin or the Central Office for the purpose of increasing the revenues of the College, but it is a plan which I have the honor to submit, after having given it a preliminary tryout in North Carolina. The plan was received with much enthusiasm by both the Fellows of the College and the Medical Society of North Carolina. Indeed, it may very truly be said that there is a demand, a *vox populi*, on the part of the profession, that some such plan be inaugurated whereby it may be brought into closer touch with the College. Hence the following:

According to the rules of the College a young man must have practised his profession eight years before he can be admitted as a Fellow. This is a very wise and beneficent provision. True, he is allowed the one, two, or three years that he serves as an interne; but at the best this leaves an interval of five or six years, which is the critical period in a young professional man's life. To this date, medical schools say very little about fee-splitting, unethical advertising, commercialism, standardization, etc.; leaving their graduates to sink or swim according to the environment in which they may chance to be placed. That the majority of young graduates go straight is a source of much gratification, but that many of them fall upon evil ways is too apparent to need discussion. It is the young man that we wish to reach.

This whole matter is the outcome of a conversation between Dr. Allan Craig, associate director, and myself, on the occasion of his visit to my home last February. At that time we discussed the advisability of establishing an under-collegiate organization which should have for its two-fold purpose the training of men for Fellowship in the American College of Surgeons, and spreading the propaganda of the College. A few days later I formulated a tentative scheme embodying these two central ideas and submitted same to Dr. Franklin H. Martin, director-general, and to Dr. Craig.

Before establishing a North Carolina unit of the proposed organization, we sought the approval of the State Executive Committee of the American College of Surgeons and of the North Carolina Fellows of the College. After securing the endorsement of these bodies, in regular session assembled, we proceeded to put our plans to the test by organizing a North Carolina unit of the Candidate School for Fellowship in the American College of Surgeons.

The proposition was received with great enthusiasm by the profession, as is shown by the fact that the Medical Society of the State of North Carolina, which was meeting at the same time and place, in its House of Delegates and General Sessions, gave the movement its unqualified and unanimous indorsement. I take it

that the reception accorded the scheme by the profession in North Carolina is an omen of what we might expect in other States and Provinces.

While it was never intended that the Candidate School for Fellowship should have any official relation to the state or provincial societies, yet, since they are to be our recruiting ground, it is highly desirable that we secure their goodwill and endorsement.

Furthermore, since the organization was effected, it began to function along practical lines with every prospect of success. But on the receipt of Dr. Martin's telegram we suspended our activities in deference to his wishes, simply holding the organization in *statu quo.* However, we had already gone far enough to demonstrate that the scheme was practical, workable, and capable of serving a useful purpose as a liaison unit between the College on the one hand and the profession on the other, as will be specified later.

Perhaps we can best present the plans to you gentlemen by reading the preamble to the draft submitted to the Director General February 8, 1923, and a synopsis of the plans which I desire to present to you today.

Preamble: The American College of Surgeons is the most important organization of its kind in the western hemisphere, if not in the world. It is working in hitherto unoccupied territory; it is doing pioneer work of the highest order; it is standardizing surgeons, specialists and hospitals. Incidentally, it is standardizing the ideals of the profession as a whole, as well as those of the laity. This latter feature is shown by the stress the College puts on the public meetings at the sectional meetings.

But there is still much to be accomplished. It is to be regretted that there is still a wide chasm between the College and the profession, as a whole. This is due to several reasons:

First: The College is not as yet fully understood in the purposes, plans and scope of its work.

Second: The very success of the College has brought forth criticism from several sources; some of it being personal, possibly some because of its affiliations, some from other medico-surgical bodies envying the prestige the College has gained.

Be that as it may, there is an enormous amount of work to be done to bridge the gap between the College and the rank and file of the profession.

Besides, the educational propaganda of the College must go on "in perpetuity." This is, of course, necessary because it takes a long time to educate the profession and the people to an ideal. Each year brings forth a new crop of professional men and laity to be educated.

In order that the work of the College may be supplemented in the most effective manner and that the greatest good may be done to the greatest number, *it is proposed that a class of auxiliary bodies be organized, one in each State and Province,* to be known as the Candidate School for Fellowship in the American College of Surgeons.

It is firmly believed that the institution of the organization proposed will do more to prepare the medical mind for the reception of the College, the adoption of the standards of the College and the lining up of various desirable candidates within the rank and file of the profession now, and those who are being graduated each year, than anything that has yet been proposed. It will help to bridge the chasm between the profession and the College; it will broadcast its principles, its standards and the high class work the College is doing. It will make the profession feel that the College is an integral part of it, that it is established and run for its good, and that the College has no ulterior object except the uplifting of ideals and standards for the benefit of the profession, the hospitals and the eleven million patients who come into these institutions every year.

Take North Carolina as an illustration: I believe we can enroll a membership of 300 men the first year, and what a fine class of candidates that would be for us to work upon, to teach, to train, to encourage, to convert thoroughly to the standards of the American College of Surgeons. The proposed organization will reach the man who is now ready to apply for Fellowship as well as the young man who is just starting his professional career.

The plan proposed is purely tentative and is being submitted for approval and criticism. The work is intended to be constructive, progressive, co-operative and ultra-ethical.

PLAN

1. *Organization.* The scheme contemplates the organization in each state and province of an auxiliary society to the American College of Surgeons.

2. *Control.* The American College of Surgeons shall have full control of the state and provincial auxiliary bodies; and no society, within the scope and meaning of the word as herein used, shall be established without the authority of the Board of Regents.

3. *Name.* The title of the proposed auxiliary societies to be the Candidate School for Fellowship in the American College of Surgeons. Dr. Martin suggests that the Fellows in each state and province be organized into chapters and that the Candidates for Fellowship be incorporated in the chapters as associate members. Dr. Martin will explain this matter to you presently.

4. *Objects.* The objects of the Candidate School for Fellowship or Chapters will embrace the following general divisions:

(a) To spread the propaganda of the American College of Surgeons.

(b) To train surgeons and specialists for Fellowship in the College.

(c) To primarily get hold of the young man as soon as he finishes his interneship.

(d) To bring about a closer relationship between the College and both profession and laity.

5. *Inauguration.* The inauguration of the Chapters shall be done by the Fellows in the several states and provinces, under the authority and following plans laid down by the College. This will insure uniformity.

6. *Administration.* Being a democracy, the internal administration, such as the election of officers, the program, assessment of dues for expenses, etc., etc., shall be left in the hands of each individual Chapter.

7. *Membership.* The membership shall consist of active and associate members. Active members shall consist of the Fellows in the respective states and provinces. The associate members shall consist of applicants who may be elected as Candidates for Fellowship.

8. *Obligations of the College.* While these auxiliary bodies, or "Chapters," as Dr. Martin prefers to call them, are to be the offspring of the American College of Surgeons, and their interest will naturally be fostered in every proper way by the College, it is to be distinctly understood that Candidate membership in a Chapter does not constitute any claim whatever upon the College to elect a Candidate to Fellowship in the College. The College will maintain its high standard for admission; and every applicant for Fellowship must be endorsed by his state or provincial credentials committee, as heretofore.

9. *Features*:—While details must be left to those in authority the following features are among those considered important:

(a) Meetings:—Candidates will be privileged to attend the chapter and sectional meetings.

(b) Candidates to attend College meetings:—Candidates will also be invited to attend the annual meetings of the American College of Surgeons.

(c) Itineraries:—In addition to the annual meetings, attendance upon the College meetings, lectures, addresses, demonstrations, etc., a feature of exceptional educational advantage will be surgical itineraries for the especial benefit of the candidates. These would be arranged by the individual state and provincial chapters. However, they should receive the recognition and patronage of the College. There could be no better means of bringing the younger men of our profession into close personal touch with the master surgeons, specialists and hospitals, than these itineraries.

(d) Service Records:—It is proposed that when one applies for membership in a Chapter as a Candidate that he furnish a complete record of his education, experience, etc. In other words, the Chapter shall secure a complete record of each applicant for Candidateship to which shall be added each year the member's experience, postgraduate work, etc.

What a wonderful fund of data these service records would be to our state and provincial committtees when a man shall be referred by the College to the Credentials Committee!

10. *Results*:—Among the beneficent results that will emanate from the proposed school for fellowship are:

(a) The education of the profession as a whole and the laity to the great value of the standards set by the College. This applies to its ethics, the evils of fee-splitting and advertising, the equipment of hospitals, the value of case records, and will constantly exemplify the true spirit that hospitals should maintain toward their patients.

(b) It will bring the College home to the young surgeons and would-be specialists. It will make them feel that the College not only wants them to be Fellows, but is willing to teach them how to live and how to develop and what pit-falls to avoid so that they may be worthy of fellowship.

Dr. Long, continuing: The following is an extract from a letter which I received just the other day from Dr. M. T. MacEachern, associate director and director of hospital activities of the American College of Surgeons, and president of the American Hospital Association:

"We just finished the Ohio State Sectional meeting last night, and one of the chief topics all the way through this conference was the Junior Candidate Group. Needless to tell you, there was not a dissenting voice, but unanimous approval and appreciation from all. St. Vincent's Hospital, Toledo, I understand, will in the future demand that all residents on the surgical side must be members of this group, and to become eligible for staff appointment they must be Fellows of the College. The speaker yesterday stated that the Junior Candidate Group idea was a solution to many of their problems of medical organization, and came just at an opportune time."

The Secretary: Our state credentials committee at the Winston-Salem meeting in February last recommended the following physicians as members of the Junior Candidate Group:

H. W. McKay	Charlotte
E. H. Hipp	Charlotte
I. M. Procter	Raleigh
W. M. Coppridge	Durham
H. C. Dixon	Madison
J. D. Highsmith	Fayetteville
D. T. Tayloe, Jr.	Washington
G. C. Cooke	Winston-Salem
T. V. Goode, Jr.	Statesville
C. O. Delaney	Gastonia
H. W. McKay	Charlotte
A. C. McCall	Asheville
Jas. W. Gibbon	Charlotte
Hunter M. Sweaney	Durham
Claude B. Squires	Charlotte
Thos. D. Sparrow	Charlotte
Allan C. Banner	Greensboro
G. B. Crowell	Lincolnton
W. F. Elliott	Lincolnton
H. S. Monroe	Charlotte
B. J. Lawrence	Raleigh
K. P. Neal	Raleigh

It was moved that the men whose names were read by Dr. Long be declared Associate Members of the North Carolina State Section of the A. C. S. The motion was seconded and carried unanimously.

OF WHAT BENEFIT ARE THE ACTIVITIES OF THE COLLEGE TO THE PROFESSION AT LARGE?

J. T. Burrus, M. D., F. A. C. S., High Point

This subject having been assigned to me, I shall ask Dr. Long to take the chair for a moment that I may discuss it.

I really feel that where two or three are gathered together and support a thing very earnestly much good can be accomplished; and now comes up the question, how much good is the American College of Surgeons going to do the profession at large? I would like to say here that I consider this organization the only one that has ever been created that looks to the standardization of surgery. I would like to say again in this connection that if the greatest good comes of this organization every man must do his part. Just as the improvement of anything in a community will benefit all concerned in that community, so this applies to the profession at large. We are living in a day of specialists, and if the College functions as it may and as its intentions are, it will certainly within a few years develop a very much better class of men, to whom may be referred those cases that will need the services of the specialists, and in this way will serve the profession as a whole. If we do our full duty as members of this College, we certainly cannot approach it in a lukewarm way. There are big things out ahead. There are many things to be done and it is not an exclusive but an inclusive organization. I do not believe that the principle of the College is to bar any man who meets its requirements, but there are certain principles laid down, there are certain fixed laws that must be complied with, and when complied with they want those individuals who can qualify so that we can do a great work in North Carolina. Then what must we get hold of? First, the surgery of North Carolina with its allied specialists. It has got to take hold of the hospitals of North Carolina, and I am going to digress far enough here to say in a very few words that standardization, as practiced, more particularly in our larger hospitals, in North Carolina is a myth or—I do not know what you want to call it—but I believe that is true. We go to clinics in Baltimore, Cleveland, Pittsburgh, Chicago and New York and find that even municipal institutions have a staff. In order to make a bluff at a staff in North Carolina we simply put on the staff anybody in the county or in an adjoining county that gives any evidence of wanting to be on the surgical staff or the medical staff or the orthopedic staff. If that fault is remedied it has got to be done by the College of Surgeons. It is the only organization to which we can turn today for relief, and if it can relieve this situation it will not only benefit the hospitals, but it will benefit every member in the profession, be-

cause we shall have much more select men on our hospital staffs. My plea in summing it up is just this, I am a recent member myself of the College and I want to say that I am surprised to see the lukewarmness that has prompted some of the members of the College in North Carolina. If a man does not stand by his state, town and local community he is not the best citizen, and if he does not stand by his organization in the state he is not a good member of the College. That is all there is to it. (Applause.)

THE PRESIDENT: I shall call on Dr. W. F. Cole to discuss the "Program of the Sectional Meetings of the College."

PROGRAM OF THE SECTIONAL MEETINGS OF THE COLLEGE

W. F. COLE, M. D., F. A. C. S., GREENSBORO

I think the program of the Sectional Meetings is one of the most difficult things we have to consider, for two reasons: first, we have a program committee who expend their energies and efforts to produce a program that is not only interesting but constructive; and, on the other hand, we have a group of members that show very conclusively their lack of interest in putting through these programs. That has been very evident tonight. It has been shown to us that a certain group or element lacks that spirit of co-operation to put through our program one hundred per cent. The program of the Sectional Meetings comprises two days. I refer to meetings such as we recently held at Winston-Salem and embracing both South and North Carolina. The first day of the meeting the men sent out by A. C. S. play an active part. The second day the hospital clinics and scientific section, in which the local men play a most important part, are held. The Charlotte meeting was one of the most interesting meetings that we have had. The meetings that I have attended since then have shown a decline in interest of the members until at Winston-Salem, where the interest of the men from this state was at such low ebb that we were forced to adjourn and not complete the afternoon. The idea is that surgeons should educate the laity to wisely choose the doctor whom they desire to treat them. The great aim is to educate the people to this point, and one of the most efficient and one of the best weapons we have in getting to the laity and teaching them is our Sectional Meetings. If the College of Surgeons has gone into partnership with us and furnished half the program and asked us to furnish the other, what will the College of Surgeons think about it if we fall down on the part that they have given us? Unless we get some sort of rejuvenator, unless we get men more interested, it is going to be hard to get men in the future to read papers before the Section. Those who have interest in surgery owe a great debt to this organization; those who have been in it the longest are the ones we look to for education, for instruction and everything that tends to build this organization to a point of efficiency in our state. Unfortunately some of those men have not seen fit to take an active part in making our program one hundred per cent efficient. At one meeting which I attended a distinguished surgeon

was reading a newspaper while the program was going on. I have really never had anything to annoy me so much as that, because I felt there was a man showing absolute indifference to the one preparing the paper and coming there and reading it. I do not see how we can expect the junior members to want to come in and join us unless our Fellows are one hundred per cent behind the Sectional Meetings.

The question has occurred to me as to why more interest is not shown in the Sectional Meetings. I do not know how to explain it. There is one thing that does handicap us and causes a certain amount of demoralization in our meetings that we may in some way be able to obviate. When the Sectional Meetings take place, as a rule the men that the College of Surgeons have sent out come first and the local men last on the list. We find a great rush to get through the program, changing the program, swapping and taking one man's place by another, in order to let somebody catch an early train out. That demoralizes the whole program, because Fellows of the College of Surgeons are like sheep. If one man goes the other man feels the desire to depart.

While I am here I want to suggest or offer a motion that may promote in some way an interest in the Sectional Meetings. I move that we ask the Director General to change the order of the program and let the hospital conference and the technical part of the program be on the first day and the College men come on the second day; and maybe we can get some of the men to stay long enough to hear the College men. I have discussed this with some of the Fellows. A good many have expressed the opinion that it is difficult to put through our scientific session one hundred per cent strong on account of the fact that the men we want on the program come from the other end of the line, professors and eminent specialists from the different universities. We have to admit that we have sometimes fallen down on the job of putting through our scientific session, and I think it is up to us tonight to formulate some plan or do something to rejuvenate these meetings.

DISCUSSION

Dr. E. T. Dickinson, Greenville: As I see it, the program of the Sectional Meetings, in fact the entire A. C. S., is a school, and we take advantage of it in proportion as we are students. We got tired of school long ago and we have an aversion to going back, but nevertheless this A. C. S. is a school that is a necessity, and we must learn to go back and be school boys again and sit at the feet of the teachers. It is not the most pleasant thing that I have ever undertaken, but at the same time it is a dire necessity to the surgical profession of the state. Those men who do not take an interest in the program, as we have observed tonight, are men who have never been systematic, scientific students. They have never learned systematic investigation of anything. They are the men that leave the hall to enjoy moving-picture shows. If you will follow them you will find that they are interested in the picture shows and go every night, or every night that they can

get off from regular routine work. This Junior Candidate Group, I imagine, will be made up of men who have been drilled in scientific study, systematic study; there will be more College men that have been grounded in such work, and the solution, I believe, will come with this Junior Candidate School; they will be more efficient than us older men. The four, six or eight years in college are necessary to get a man down to real investigation, to be a really systematic student and I believe that this Junior Candidate Group will cause a revival of interest in our state section.

I understand that some of the speakers sent out by the College make the same speech every year. I understand that they say the North Carolina Section is the best that they attend, that it is a growing process from the beginning up. I look for it to have gradual improvement and I do not think there is any bomb that we can fire that will revive interest; we have to keep digging at it as we do everything else in which we succeed.

Dr. C. S. Lawrence: I thought we had a pretty good meeting at Winston-Salem. We worked hard. My wife quarrelled with me for two days for not coming home during the meeting. Dr. Craig and Dr. MacEachern told me it was a good meeting, as good as the average that they had on the circuit. They started in the Middle West and went to the Gulf, back to Florida and up from the South, and they said that we had a good meeting in Winston-Salem.

There is one thing I see about the Sectional Meeting that will cause men to lose interest in the detail end of it, and that is the public meeting in the evening. The A. C. S. in Chicago makes a great drive for that public meeting in the evening. It is their great aim to get as many people out in the evening as they possibly can to attend the public meeting. That is the climax of the whole meeting. After that everybody that wants to can go home. If you want to hold the crowd you had better get in line with the railroad company and get them to stop running trains out until the next afternoon at four or five o'clock. I know at Columbia last year we were having a pretty good meeting and all at once somebody said that his train left at three o'clock. Every one left the room but the man that was reading the paper, so he quit and joined the crowd.

Now if you put that public meeting on the second evening, I believe you could hold the crowd and get them there. To me these Sectional Meetings are very interesting indeed. It takes the place of the itinerary mentioned here this afternoon of visiting surgeons over the state. You go once a year to North or South Carolina to see your colleagues. If you put enough pep in it we can make it one of the most interesting meetings in North or South Carolina.

Dr. Long: I want to say that Dr. Cole gave us a very fine talk on this subject, as well as did Drs. Dickinson and Lawrence. I am loyal to the College in every particular and I always throw up my hat for it. I believe that it has done work for us that we can never be sufficiently grateful for. I want to say also that North Carolina is not by itself in lack of interest manifested during the afternoon of the second day of the Sectional Meetings, because I have been

on these lecture itineraries in the Middle West and South, and, as mentioned by Dr. Lawrence regarding the South Carolina meeting last year, if it had not been for the North Carolina men that were present we would not have had a meeting the second afternoon; and the only reason the men stayed at all was that the train didn't go at that hour.

It is a fact that the College lays great stress on the public meeting. Personally I believe that they lay too much stress on it. I do not say that in the way of criticism, but I do not believe that it is the best way to get at the public. If I were asked to name a program for the Sectional Meetings, I would cut out the public meetings. I would try to educate the doctors and nurses and hospital people and then let that information gradually filter down to the public. But that is not the judgment of the College itself, the Director General and Board of Regents; and they are wiser than I. I think what we should do, even though we are not so much in favor of it, is to hold up their hands and help them to carry out their plans, as far as practicable. Last year I attended and made three speeches at each of five of the twenty-two Sectional Meetings that the College held; and did it at my own expense and loss of time. I think we ought to continue to support the policy of the College, but I do believe, as suggested by Dr. Cole, (he and I talked this matter over), that there should be some solution of this problem that is before us tonight. I am inclined to think, as he does, that if we could arrange to have our scientific meeting on the first day and then have the public meeting on the second evening, devoting the first evening to the scientific session, and then holding the hospital conference on the second day, it would help solve the problem. I think it would be wise for us to pass a resolution, as Dr. Cole has suggested, petitioning the Director General and the Board of Regents to consider this matter. I would like to hear Dr. C. S. Woods of Cleveland, Ohio, a distinguished Fellow of the College, express himself.

Dr. C. S. Woods, Cleveland, Ohio: I cordially agree with what Dr. Long has said. I think I would abandon the public meeting as it is now held, but if that could not be done I think I should place the scientific program on the first day as Dr. Long has stated, because it has become an old story to the Fellows who attend to hear the representatives of the College the first day and then on the second day present the program. I believe the College will take kindly to that suggestion, simply because you know as well as I do that the A. C. S. has got to find some new material or some new plan of getting its program before the profession and the public as the years go by. It is not possible to do it with this treadmill stuff year after year. (Applause.)

Dr. Cole: I beg to submit the following resolution:

Whereas, there is a noticeable lack of interest in the scientific session held in the afternoon of the second day of the Sectional Meetings, reference being especially to the North and South Carolina Sectional meetings, 1923 and 1924; and,

Whereas, many of the readers of papers fail to come, or leave before the afternoon session of the second day, which is the time allotted for the scientific session; and,

Whereas, some of the distinguished men sent out by the Central Office in Chicago leave before the afternoon session of the second day is over;

Therefore, Be It Resolved by the North Carolina State Section of the American College of Surgeons that the Director General and Board of Regents of the American College of Surgeons be respectfully requested to consider the advisability of changing the time of holding the Public Meeting from the first evening to the second evening.

On motion the resolution was unanimously adopted.

THE PRESIDENT: Dr. Woods, we want you to feel that you have the cream of the attendance to hear you tonight and though it is a long time till morning we do not mind waiting. We want to hear what you have to say. Dr. C. S. Woods, of Cleveland, Ohio, will now speak to us on "The American College of Surgeons as an Educational Movement."

DR. C. S. WOODS: The quality of the remnant could not be better, and after all, not speaking disparagingly of our friends who have grown weary and left the meeting, it is the remnant that usually puts a thing through. That is not a recent observation. I have been delighted to see the fine spirit shown in the meeting this evening. I have prepared a paper, but my sense of fitness prevents my reading it to you because of the lateness of the hour. I will summarize it briefly.

My subject is "The American College of Surgeons as an Educational Movement." I must thank Dr. Long for asking me to write this paper, because, as a matter of fact—I am almost ashamed to confess it—I have never analyzed the College as an educational movement. I have been engaged in various educational movements; sometimes they have ended satisfactorily and other times they have ended disastrously. It is a vast subject and I think that the A. C. S. as an educational movement does not occupy a separate category at all, but is in the classification of all great educational movements. An educational movement should, first of all, have a truth or principle which is vital and which can be intelligently presented to those whom it most concerns. Now in my paper I analyzed this truth and showed what it is, or attempted to do so. That is the first thing. An educational movement must have principle or truth which is important and vital and which can be intelligently presented to those whom it most concerns. Consequently, that truth must be disseminated through some means or other, and it must secure recognition and application. Now you can see the A. C. S. with all its ramifications, all its hospitals, societies and means by which this truth is demonstrated. The hospitals, of course, are the institutions or means by which the truth is supplied. The third thing is that this truth must justify itself. Now all truth justifies itself, for an educational movement that has succeeded in its purpose, that has been consummated, must have had a truth which could ultimately justify itself, and it ought to be more than a half truth. It

ought to be a principle which could not be destroyed by its opponents. We must not forget that this truth which the American College of Surgeons has been disseminating has not had an easy road to follow, by any means. Truth must ultimately be accepted by all whom it most concerns if it is to be of the largest usefulness. Now this is the truth, this is a principle. I should like to take the time to show how this principle is evolved. Suppose it is limited to ten hospitals. Well, there is either something the matter with the truth or it has not the right means of dissemination or cannot justify itself, which would indicate there is something wrong with it. Ultimately, everybody to whom the truth most intimately applies, everyone of the ten hospitals, must accept it. Therefore, in North Carolina, Ohio, and everywhere, every hospital should accept the program of the A. C. S. as the rule of conduct, the principle of operation of that part of the institution to which it applies. With this brief outline of my paper you can see that after all this educational movement was a great conception, a splendid vision, and it has now come to be a doctrine taught with such emphasis and conviction that every intelligent reasonable man must accept the truth of it, even if for the moment it is impossible for him to apply it.

In closing let me tell you how happy I am to be with you and how much I wish I might see you again, and I bid you "Goodnight."

THE AMERICAN COLLEGE OF SURGEONS—AN EDUCATIONAL MOVEMENT*

C. S. Woods, M. D., St. Luke's Hospital, Cleveland, Ohio

The work which the American College of Surgeons has done since its organization has been quite as productive of good among the hospitals of this country as the work which the Council on Education of the American Medical Association did among the Medical Schools. Indeed, I think it is safe to say that, as an educational movement, the enlisting of that portion of the medical profession which does its practice in hospitals is without parallel in its benefits to the profession, to the hospitals, and to the public. It is an interesting fact that the American College of Surgeons did not create the fundamental purpose of the movement nor the factors which made it possible, but rather gathered the elements, which were more or less unrelated and chaotic, into a systematic plan.

We who had a part in the early work of the American College of Surgeons among the hospitals will recall that perhaps the most important principle which the College laid down was that of the relation between the patient and the hospital; between the hospital and attending physician; and between the physician and the patient. In a general way we all appreciated the fact that the patient had a claim upon the institution for a certain kind of service and he expected the physician to treat him in the most scientific manner possible, and yet we for the most part had not formulated this very important relationship in such terms that it constituted a rule of conduct for the institution.

*Dr. Woods' formal address.

Let us see how fundamental the factors of this relationship are and how nearly they really do make a principle which we must observe:

Firstly, the patient may justly claim so much of the physician's time and attention as a well written case history would require.

Secondly, the physician should give the patient as much time and attention as a well written record of his observations will require.

Thirdly, the hospital should require the attending man to give so much attention and time to his patient that he will record the salient and essential features of history, diagnosis, treatment, and end results.

Fourthly, the public has a right to know that the hospital, which is after all a public institution, is requiring such important records to be made by the attending physician.

This function, which is shared by the attending physician and the hospital, was not created by the American College of Surgeons. It is decidedly to the credit of some of the hospitals of this country that they always observed this important duty, but be it said to the shame of the majority of hospitals that they perhaps did not know that there was such a duty, but if they did, they were blind to it. It is, in my judgment, to the great credit of the College that it presented this obligation with such emphasis and conviction that hospitals immediately began to study this important relationship and some of them readily accepted the duty of making it a living thing. Others have been slow to do so, but, on the whole, today the hospitals are convinced that the position of the American College of Surgeons was and is unquestionably correct. Scarcely a day that hospital administrators do not have to refer to records, and the best surgeons in the country are calling upon hospitals for them. They expect records to have been well written. It is only necessary to compare the records in a hospital today which is approved by the American College of Surgeons and is rigidly requiring good records of the house staff and the attending staff with the records of the same hospital in days prior to the work of the American College of Surgeons to see how worthless the earlier records were and also how valuable the present records are, and how much more worthwhile they may be as we improve in our skill in making them. It has been rather difficult, it is true, to convince Boards of Trustees; first of the duty of making these records and, secondly, of their value. We have insisted that these records may be important in litigation, and so they may, but that is not the most important reason why records should be made. The real value of the record lies in the truth which it records concerning the patient's history, his disease, the examination made by the attending physicians, the treatment which he received, the progress, and the end results, and if that record is carefully made the truth of it is sacred. Perhaps we have really not made an intelligent effort to convince laymen who have relationships of one kind or another to hospitals that one of the purposes of a record is to secure for the patient and the

institution some tangible evidence, which the institution may hold after the patient leaves the hospital, of the quality of service which the institution renders.

I perhaps only need to mention two or three things to indicate how the record may be used in order to show the kind of service which the patient receives:

Suppose that the record is made of a patient who had typhoid fever and there is no evidence of thorough laboratory work having been done in such a case. At once the absence of a record of laboratory work, which contributes to the certainty that the diagnosis of typhoid fever was correct, would discredit the attending staff, the house staff and the institution.

Again, suppose that the records show a very small number of postmortem examinations. I know of nothing that could more certainly indicate a lack of genuine scientific concern on the part of the attending staff and house staff than a small number of postmortem examinations. Or, to put it the other way, suppose that the records show in the cases of deaths of patients a relatively large number—35 or 40 per cent we shall say—of postmortem examinations. That fact alone establishes the scientific interest which the attending men have in the acquisition of knowledge concerning the cause of disease and death.

A third suggestion may be made. Suppose the record shows that a patient was operated on for appendicitis. The record merely says "appendicitis" and nothing more. Can you imagine greater laxity in the study of the patient than this would indicate? In other words, the surgeon has probably operated without first making a diagnosis and certainly without confirming the diagnosis after the operation has been done. It is clear, then, that the patient is after all the beneficiary, more than any other person, of the requirement of our best institutions now that good records shall be made.

I do not know of any general movement in this country or elsewhere which has brought and is bringing such valuable results to the sick as this movement inaugurated by the American College of Surgeons.

What is an educational movement? First of all there must be an important existing truth or principle which is capable of being presented in an intelligent manner to those who should be interested by it. Educational movements do not create fundamental factors, as I have indicated. They merely formulate and systematize basic truth and its corollaries. The American College of Surgeons set out primarily to improve the quality of surgery which was being done in the hospitals of this country. Very soon, however, it was quite evident that there were certain underlying facts which must primarily be studied and analyzed before the work of the surgeon could possibly be truly evaluated.

These facts mainly were that the places in which the surgeons worked, namely the hospitals, were almost universally careless in their attitude toward records of study of the patient and of the treatment which was applied, and were, obviously, without any recorded evidence that the patient had had systematic and intel-

ligent study before surgical procedures were instituted, and afterward there were no data upon which to base an estimate of the value of the work of the surgeon, nor was there any way by which his work could be made a subject of information to the American College of Surgeons or any one else.

The second underlying fact was that the hospitals were all too frequently doing little more than giving board and lodging to the sick.

The third underlying fact was that there was no sort of medical organization and, consequently, every attending man could, if he chose to do so, conduct his own work independently of and without reference to the work of any one else.

The fourth underlying fact was that no authorized body in the hospital was attempting to secure for the patient:

First, competent medical service, including reliable laboratory work.

Secondly, a true record of what was done for him, and

Thirdly, a prohibition upon traffic in the serious business of caring for the sick.

The truth, then, which may be stated as a principle which is the foundation of the educational work of the American College of Surgeons is this, that the diagnosis, the treatment and the prevention of disease, and the care of the sick in hospitals constitute an entity, something which can be measured and recorded. Surely, no more important principle could inspire a great effort to secure its general recognition than this one. Hospitals had been giving a good deal of attention to physical conditions and, indeed, the discussions in hospital meetings were largely directed to the material things. It seemed that the professional work was separating itself out of consideration by hospital authorities. The American College caught a great vision when this condition was recognized and steps were taken to place upon the institutions directly the responsibility of applying this important principle in the care of every patient.

The truth which is the foundation of any educational movement must be disseminated in one way or another to those who should recognize it and make use of it.

The American College of Surgeons is now the center from which this movement radiates to all the hospitals. The College has wisely employed personal representatives who have, on the whole, been well received by the institutions. These visitors have been teachers. They have inspired the institutions to seek the wholly desirable results which are sure to follow the faithful application of the principles of standardization. Some institutions themselves have been potent factors in inspiring other institutions to attain the minimum requirement of the College. There are many of us who are glad to testify that the College has been a source of help in our efforts to lead our staffs to co-operate in securing good and useful records. The educational work of the College has not been perhaps easier to accomplish than other great educational objectives. It is well to say that in the face of much opposition, and against the resistance of a number of people and institutions, the College

has persisted with the determination born of great conviction in carrying to the institutions and the medical profession this important principle of professional efficiency in the hospital.

This principle must justify itself. Sufficient time has passed to demonstrate the soundness of the principle and its practicability. If this truth could not have justified itself, it would today be discarded. On the contrary, however, it is becoming more firmly established as the days go by. This is a very encouraging fact, not only to the College but to the institutions and the medical profession, and as the public comes to know more about the meaning of standardization, this truth will become much more appreciated.

In the fourth place, this principle must ultimately be accepted by all to whom it most directly applies if it is to be of the greatest usefulness.

The statistics which the College has published indicate the great increase in the number of institutions which are making efforts to adopt the minimum standard. The larger institutions could accept the principle of standardization much more readily than the smaller institutions.

We should not regard the educational work of the American College as completed by any means. It was absolutely necessary, as in all educational movements, to fix a level to which the institution could be brought as early as possible. There is an analogy between the growth of this educational movement and our public school system. We first have the grade school, then the high school. The minimum standard may be said to be the work of the grade school. Most of our institutions have not passed this level and many of the smaller ones have not reached it. We must frankly recognize the difficulties which the institutions which have from 25 to 50 beds are encountering in their efforts to adopt the minimum standard. Perhaps the two greatest difficulties are, first, the failure of the attending men to see the importance and value of good histories. It is certain that there are many men who are doing work in the smaller hospitals who really have not thought through the problem of good professional work. They are still determining the quality of work by the most obvious method. If the patient goes out of the hospital alive that is the test of good hospital service. The second difficulty which the smaller hospitals meet is the unwillingness of the board of trustees to adopt the standard until it is heartily approved by the attending men. It is evident that much preliminary work must be done in these institutions. They can not fail to be inspired, however, by the example of the larger institutions, which have abundantly demonstrated the value of the minimum standard. It must be remembered that the work of the high school is rooted in the work of the grade school. Likewise, we shall develop our larger and better study of patients and our superior record making on the basis of the minimum standard which we have accepted. It is evident the College must carry this work beyond the present plane.

If records are not to be used after they are made, then we shall after a while ask ourselves whether the work we are doing at

the present time in reaching the minimum standard is worth all that it costs. It has been worthwhile and may constitute the basis for valuable study and investigation by members of the staff. We may expect to see marked improvement in all the professional work of institutions just because it will be reviewed some time in a critical way. No more valuable exercise can be performed by attending men and house staff than the thorough study of records. If these records should reveal perfect diagnosis, prognosis, treatment, and care, even then we should want to maintain the high standard which we had reached, but any one who goes over the records of a year in a hospital will likely be convinced that they are far from the requirements of accuracy.

Earlier in this paper it was stated that the patient has been, and is, and will continue to be, the recipient of the largest good from the educational work which the College has done. The proposition, however, that the truth must ultimately be accepted by all to whom it most directly applies if it is to be of the greatest usefulness impresses upon us the importance of exerting ourselves to secure the acceptance of the minimum standard by every institution just as soon as possible. It must be true that there is not one of us who does not sincerely hope that every American hospital will speedily lift its professional work to the highest possible level. This is not merely an obligation which rests upon the institutions, but it is certainly the only ideal which we can readily attain and utilize for the benefit of the institution, the professions of medicine and nursing, and the public.

Dr. Long: I move that we extend a rising vote of thanks to Dr. Woods for the splendid address he has given us on this occasion. Carried unanimously.

Dr. Long: I regret to announce the death of our friend and Fellow of the College, Dr. Eugene B. Glenn, of Asheville, who, as you all know, died recently. He is the only one of our Fellows who has died during the year so far as I know.

Here is another thing I wish to say; on conference with Dr. L. B. McBrayer, Secretary of the State Medical Society, who is also a member of the Publication Committee, I learn that the Publication Committee has consented to have our proceedings printed in the Transactions of the State Medical Society. You will realize that as the matter now stands we have no means of making a permanent record, but if we can get our proceedings in the same volume with the transactions of the State Medical Society we shall have a permanent record of what we do. Of course we pay our pro-rata part; and, fortunately, we are able to do so. I would be glad if some one would authorize the publication of our proceedings in the Transactions of the State Medical Society and the payment for same out of our treasury.

It was so moved, seconded and carried by vote of the Section.

Dr. Long: I consider this meeting a great success. While all of us have suffered from a certain element of opposition and criticism, yet, if you are constituted as I am, that does not discourage you. There

is nothing so stimulating to one's best efforts as contact with some sort of opposition. We are going to make this thing go; there is no doubt about it. We have taken several advance steps tonight and shall take more every time we meet. We have the loyal support of every one who remained in the meeting and many more besides. I want us to send the glad tidings to the young surgeons of North Carolina that they are welcome to come in as Associate Members of the American College of Surgeons. We want them. They are the fellows that we are after; and we shall have an organization that North Carolina will be proud of. I thank you!

THE PRESIDENT: We shall now call for the Treasurer's Report.

DR. LONG: As Secretary of the Executive Committee the funds of the North Carolina Section of the College were placed in my hands and I beg to report as follows:

Cash received from Dr. A. J. Crowell, former Chairman Treasurer	$230.25	
Cash received from C. E. Kahlke, Treas. A. C. S., being appropriation for the N. C. Section for 1924	300.00	
Total	$530.25	
Paid on vouchers from the Local Committee of Arrangements Winston-Salem		$ 92.50
Balance deposited in the Textile Savings Bank, Greensboro, N. C.		437.85
		$530.35

THE PRESIDENT: I want us to come to the support and service of Dr. Long in the interest of the College in the state. There is one thing that we as members of this organization should not suffer; and that is that Dr. Long should do all this work and meet so much of this expense, practically all of it, out of his own pocket without reimbursement. I think that we ought to meet the expense necessary to conduct the College in the state.

DR. COLE: If we have a balance of nearly $500 in the treasury, Dr. Long should not do the work and then pay for it. I make a motion that if possible we use that fund to defray the expenses of running this organization, and then, if there is a deficit, that we all be assessed our proportionate part to make up the deficit.

This motion was seconded by Dr. A. M. Whisnant, and was unanimously carried.

On motion the meeting adjourned.

ALPHABETICAL LIST OF MEMBERS OF MEDICAL SOCIETY WITH POSTOFFICE ADDRESS

*Present at 1924 Meeting at Raleigh

Name	*Address*
Abel, J. F.	Waynesville
*Abernathy, Claude O.	Raleigh
Abernathy, H. N.	Denver
Abernathy, Miles B.	Reidsville
*Abernathy, E. A.	Chapel Hill
Achorn, John W.	Pine Bluff
Adams, C. A.	Durham
Adams, Charles E.	Gastonia
Adams, J. L.	Asheville
Adams, L. C.	LaGrange
*Adams, M. R. (Hon.)	Statesville
Adams, N. B.	Murphy
*Adams, R. K.	Raleigh
Adkins, M. T.	Durham
*Alexander, Annie L. (Hon.)	Charlotte
Alexander, Geo.	Asheville
*Alexander, James R.	Charlotte
Alexander, M. J.	Montgomery, India
*Allan, William	Charlotte
*Allen, Benjamin G.	Henderson
*Allen, Chas. I.	Wadesboro
Allen, Jos. A.	New London
Allen, Rufus L.	Waynesville
*Allgood, R. A.	Fayetteville
Allhands, John M.	Cliffside
Ambler, Arthur C.	Asheville
Ambler, Chas. P. (Hon.)	Asheville
*Anders, McG.	Gastonia
Anderson, Abel	Denton
*Anderson, Albert (Hon.)	Raleigh
Anderson, Chas. A.	Burlington
Anderson, James A.	Gastonia
Anderson, James G.	Asheville
Anderson, Jasper N.	Albemarle
*Anderson, Thos. Eli (Hon.)	Statesville
Anderson, Wade H.	Wilson
Anderson, Wm. S.	Wilson
Andrews, John H.	White Rock
Andrews, Nathan H.	Rowland
Andrews, Robert M.	Bostic
Angel, Frank	Franklin
Anthony, J. E.	Kings Mountain
Archer, Isaac J.	Black Mountain
Armfield, Romulus	Marshville
*Armstrong, C. W.	Salisbury
*Ashby, E. C.	Mount Airy
*Ashby, J. W.	Raleigh
Ashe, E. S.	Wadesboro
Ashe, J. R.	Charlotte
Ashworth, B. L.	Marion
*Ashworth, W. C.	Greensboro
Austin, D. R.	Charlotte
Austin, F. DeCosta	Charlotte
Austin, J. A.	Charlotte
Austin, J. W.	High Point
*Averitt, K. G.	Cedar Creek
*Aydlett, H. T.	Greensboro
Aydlette, Jos. P.	Earl
Baggett, Leaman	Tabor
Bailey, K. H.	Oteen
Baird, C. A.	Mount Airy
Baird, John W.	Mars Hill
*Baker, Horace M.	Lumberton
Baker, J. M. (Hon.)	Tarboro
Baker, W. E.	Arden
Bandy, W. G.	Maiden
Bangle, J. A.	Concord
*Banner, A. C.	Greensboro
*Banner, Chas. W.	Greensboro
Barbee, G. S.	Zebulon
Barber, Y. M.	Liberty
Barefoot, Graham B.	Wilmington
*Barefoot, M. L.	Dunn, Rt. 6
Barker, C. R.	New Bern
Barnes, B. F.	Elm City
Barrett, H. P.	Charlotte
*Barron, A. A.	Charlotte
*Bass, H. H.	Henderson
*Bass, Spencer P.	Tarboro
Battle, Geo. C.	Asheville
*Battle, Ivan P.	Rocky Mount
Battle, James P.	Nashville
*Battle, John T. J. (Hon.)	Greensboro
Battle, S. W. (Hon.)	Charlotte
Baynes, R. H.	Durham

Name	*Address*
Baynes, R. S.	Hurdle Mills
*Beall, L. G.	Black Mountain
Beall, Wm. P. (Hon.)	Greensboro
Beam, H. M.	Wood
*Beam, R. S.	Lumberton
Beasley, E. B.	Fountain
Beckwith, R. P.	Rosemary
Belk, Geo. W.	Gastonia
*Bell, A. E.	Mooresville
Bell, Carl W.	Raleigh
*Bell, G. E.	Wilson
Bellamy, Robt. H.	Wilmington
Benbow, J. T.	Winston-Salem
Bennett, Jos. H.	Wadesboro
Benton, Geo. Ruffin	Fremont
Bernard, Holman	Pinnacle
Berry, John	Greensboro
*Best, Benj. W.	Greensboro
Best, Henry B.	Wilson
Biggs, Montgomery H.,	Rutherfordton
Billings, G. M.	Morganton
Bingham, G. D.	Sugar Grove
Bingham, Geo. P.	Mooresville
Bisch, Louis E.	Asheville
Bitting, Numa Duncan	Durham
Bittinger, S. M.	Sanatorium
Bizzell, Thos. M.	Goldsboro
Black, O. R.	Landis
Blackburn, T. C.	Hickory
*Blackshear, T. J.	Wilson
*Blair, A. McNiel	Southern Pines
Blair, J. L.	Gastonia
Blair, M. P.	Marshville
Blalock, B. K.	Charlotte
Blalock, Nathan M.	McCullers
*Blanchard, T. W.	Hobbsville
Blue, A. McN.	Carthage
Boaz, Thos. A.	Stoneville
*Boddie, Needham P. (Hon.)	Durham
Boice, E. S.	Rocky Mount
*Bonner, H. M.	Raleigh
*Bonner, J. B.	Aurora
*Bonner, K. P. B.	Morehead City
*Bonner, O. B.	High Point
Booker, L. S.	Durham
Boone, S. B.	Jackson
*Boone, W. H.	Durham
Bost, T. C.	Charlotte
Bostic, Wm. C.	Forest City
Bowdoin, Geo. W.	Wilmington
Bowers, M. A.	Winston-Salem
*Bowling, Edwin H.	Durham
*Bowman, E. L.	McDonalds
Bowman, H. E.	Aberdeen
*Bowman, H. P.	Greensboro
Bown, Herbert H.	Asheville
Boyce, J. M.	Wadesboro
Boyden, W. C.	China Grove
Boyette, E. C.	Charlotte
Boyles, A. C.	Troy
*Boyles, J. H.	Greensboro
Boyles, M. F.	Dallas
Brackett, W. E.	Henderson
Braddy, Wade H.	Greensboro
Bradford, B. M.	Lincolnton
*Bradsher, Wm. A.	Roxboro
Brantley, Hassell	Spring Hope
Brantley, J. C.	Spring Hope
Brawley, M. H.	Salisbury
*Brawley, Robt. V.	Salisbury
Bray, T. L.	Plymouth
Brenizer, A. G., Jr.	Charlotte
Brenn, Capt. C. E.	Ft. Bragg
Brewer, J. F.	Asheville
*Brewer, J. S.	Roseboro
Briggs, H. H.	Asheville
*Brinkley, H. M.	West Durham
Bristow, C. O.	Rockingham
Britt, J. N.	Lumberton
Brittle, Paul C.	Burlington
*Brockmann, Harry L.	High Point
*Brooks, B. U.	Durham
*Brooks, G. M.	Elm City
Brooks, H. E.	Clayton
*Brooks, R. E.	Burlington
Brookshire, H. G.	Asheville
*Broughton, N. B.	Raleigh
Broun, Matthew S.	Asheville
Brown, Clarence E.	Faith
Brown, E. M.	Washington
*Brown, G. A.	Mt. Ulla
Brown, G. W.	Raeford
*Brown, J. P.	Fairmont
Brown, J. S. (Hon.)	Hendersonville
Browne, Arthur T.	Winston-Salem
Brownson, Wm. C.	Asheville
Brunson, E. P.	Albemarle
Bryan, Lorenzo D.	Snead's Ferry

Name	*Address*
Bryant, Chas. G.	Elkin
Bryson, E. J.	Cullowhee
Buchanan, C. L.	Union Mills
Buchanan, E. J.	Lexington
Buchanan, L. T.	Laurinburg
Buckner, J. M.	Swannanoa
*Buffaloe, J. S.	Garner
Buie, Roderick M.	Duke
*Bulla, A. C.	Raleigh
*Bulla, M. S.	Elizabeth City
*Bullard, G. F.	Elizabethtown
*Bullitt, J. B.	Chapel Hill
*Bullock, J. H.	Oxford
Bullock, Thos. C.	Autryville
Bullock, W. B.	Oxford
*Bulluck, Ernest S.	Wilmington
Bunn, J. J.	Mt. Pleasant
Burbage, Thos. I.	Como
Burleson, W. B.	Plumtree
Burleyson, L. N.	Concord
Burnett, Isaac E.	Mars Hill
*Burrus, John T.	High Point
*Burt, B. W.	Holly Springs
Burt, S. P.	Louisburg
Busby, Julian G.	Spencer
Butler, B. F.	Clinton
*Butler, Leroy J.	Winston-Salem
Butt, R. B.	Marion
Byerly, Andrew B.	Cooleemee
Bynum, John (Hon.)	Winston-Salem
*Byrd, W. C.	Morrisville
Caddell, S. W.	Elon College
Caldwell, J. H.	Charlotte
*Campbell, Alton C.	Raleigh
Campbell, A. S.	Durham
Campbell, Jas. I.	Norwood
Campbell, J. R.	Newton
Campbell, J. W.	Gastonia
Candler, Chas. Z.	Sylva
Cannady, Sam H.	Oxford
Capehart, Alanson	Roxobel
*Carlton, R. L.	Winston-Salem
Carmichael, T. W.	Rowland
Carr, Ransom Lee	Rose Hill
Carroll, John L.	Asheville
Carroll, John W.	Wallace
*Carter, H. W.	Washington
Carter, P. C.	Madison
*Cason, H. M. S.	Edenton
Casteen, Kenan	Mayodan
Cater, C. D.	Greensboro
Cathell, J. E.	Moncure
Caton, Geo. A.	New Bern
Cauble, H. H.	Kannapolis
*Caveness, Zebulon M.	Raleigh
Chambers, P. P.	Asheville
Chapin, Wm. Burdette	Pittsboro
Cheadle, C. M.	Asheville
*Cheatham, Goode	Henderson
*Cheek, C. E.	Fuquay Springs
Cheesborough, Thos. P.	Asheville
Chester, P. J.	Fayetteville
*Choate, Glenn Wm.	Salisbury
Choate, J. W.	Salisbury
Clark, H. S.	Asheville
Clement, Edward B.	Salisbury
Cliff, B. F.	Hendersonville
Clinton, Roland S.	Gastonia
*Clodfelter, C. M.	Lexington
Clyatt, Claude Eugene	Denton
Cobb, Wm. H., Jr.	Goldsboro
Cochran, J. D.	Newton
Cocke, C. H.	Asheville
Cocke, E. R.	Asheville
Cocke, Jere E.	Asheville
Coddington, H. A.	Wilmington
Coe, Samuel S.	High Point
Coffey, Lawrence H.	Lenoir
Colby, C. DeW.	Asheville
Cole, Walter F.	Greensboro
*Coleman, G. S.	Kenly
Coltrane, Wallace E.	Dunn
Colward, G. T.	Jefferson
Combs, Howard J.	Elizabeth City
*Cooke, H. L.	Fayetteville
*Cooke, G. C.	Winston-Salem
*Cooper, G. M.	Raleigh
Coppedge, T. O.	Nashville
*Coppridge, W. M.	Durham
*Corbett, L. W.	Goldsboro
Corpening, O. J.	Granite Falls
Costner, Thos. F.	Lumberton
Cotten, Clyde E.	Asheville
Couch, V. F.	Yadkinville
Council, J. B. (Hon.)	Salisbury
Cowell, Will H.	Shawboro
Cox, Benj. F.	Palmerville

Name	*Address*
Cox, B. T.	Winterville
Cox, E. L. (Hon.)	Jacksonville
Cox, G. S.	Tabor
Cox, Thomas A.	Hertford
*Cozart, W. S.	Fuquay Springs
Craddock, A. D.	Asheville
Craig, S. Douglas	Winston-Salem
Cranmer, J. B.	Wilmington
*Craven, F. C.	Ramseur
Craven, Thomas	Huntersville
Craven, W. W.	Huntersville
Crawford, Robt. H.	Rutherfordton
Crawford, W. J.	Winston-Salem
Crewes, N. H.	Greensboro
Croom, G. H.	Wilmington
*Crouch, A. McR.	Wilmington
Crouch, T. D.	Stony Point
*Crowell, A. J. (Hon.)	Charlotte
*Crowell, G. B.	Lincolnton
*Crowell, L. A.	Lincolnton
Crowell, W. H.	Whiteville
Crumpler, Paul	Clinton
Cummings, M. P.	Reidsville
*Currie, D. S.	Parkton
*Cutchin, J. Henry	Whitakers
*Daligny, Charles (Hon.)	Troy
Dalton, David N. (Hon.),	Win.-Salem
Dalton, W. N.	Winston-Salem
Dameron, Ernest L.	Star
Daniel, N. C.	Oxford
*Daniels. O. C.	Oriental
*Daniels, R. L.	New Bern
Darden, O. B.	Richmond, Va.
Daugherty, J. E.	Brooklyn, N. Y.
Daughtridge, A. L.	Rocky Mount
*Davidson, Jno. E. S.	Charlotte
Davis, F. M.	Canton
Davis, George	Beaufort
Davis, Jas. W.	Statesville
Davis, J. F.	High Falls
Davis, J. J.	Atlantic
Davis, J. M.	Winston-Salem
Davis, Ralph H.	Wilmington
Davis, Thomas W.	Winston-Salem
*Dawson, Walter W.	Grifton
Dawson, W. E.	Hookerton
Deans, A. W.	Battleboro
DeArmon, J. McC. (Hon.)	Charlotte

Name	*Address*
*Dees, D. A.	Bayboro
Dees, R. E.	Greensboro
Dees, Rigdon O.	Greensboro
DeLaney, Chas. O.	Gastonia
Denchfield, A. L.	Asheville
*Denson, H. A.	Bennett
*Dewar, Wm. B.	Raleigh
Dick, Julius V.	Gibsonville
*Dickie, J. W.	Southern Pines
*Dickinson, E. T.	Greenville
Dillard, G. P.	Draper
Dillard, Richard, Jr. (Hon.)	Edenton
Dimmett, J. A.	Gastonia
*Dixon, G. G.	Ayden
*Dixon, Guy E.	Hendersonville
*Dixon, Hubert C.	Madison
Dixon, Joseph	Greenville
*Dixon, W. H.	Rocky Mount
*Dixon, Wm. H.	Ayden
*Dodson, H. H. (Hon.)	Greensboro
Dowdy, J. E.	Thomasville
Drafts, Andrew B.	Hendersonville
Duffy, R. N.	New Bern
Duggins, Maj. P. E.	Ft. Bragg
Duncan, Amos C.	Forest City
Duncan, Chas. L.	Beaufort
Duncan, Julian E.	North Wilkesboro
Dunlap, L. V.	Albemarle
*Dunn, Wm. L.	Asheville
Eagles, Chas. S.	Saratoga
Easley, P. S.	Statesville
Eckel, O. F.	Asheville
Eddleman, Hall M.	Gastonia
Edgerton, Jas.L.(Hon.)	Hendersonville
Edwards, B. O.	Asheville
*Edwards, C. J.	Raleigh
Edwards, C. P.	Asheville
Edwards, F. D.	Belwood
Edwards, G. C. (Hon.)	Hookerton
Edwards, J. D. (Hon.)	Siler City
*Elias, Lewis W.	Asheville
Ellen, C. J.	Greenville
Eller, Albert J.	Readybranch
Ellington, A. J.	Burlington
Ellington, Jas. H.	Sandy Ridge
Elliott, A. H.	Wilmington
Elliott, J. A.	Charlotte
Elliott, W. F.	Lincolnton

Name	*Address*
Ellis, F. A.	Salisbury
Ellis, R. C. (Hon.)	Shelby
English, I. L.	Faust
Erwin, Evan A.	Laurinburg
Evans, J. E.	Wilmington
*Evans, L. B.	Windsor
Evans, W. E.	Rowland
Everett, A. C.	Rockingham
*Faison, I. W. (Hon.)	Charlotte
*Faison, W. W. (Hon.)	Goldsboro
Faison, Yates W.	Charlotte
Farrior, J. W.	Warsaw
*Farthing, L. E.	Wilmington
*Fassett, Burton W.	Durham
Fearing, Isaiah	Elizabeth City
Fearing, Zenas	Elizabeth City
*Fearrington, Jos. P.	Winston-Salem
Felts, Robt. L.	Durham
*Fenner, Edwin F.	Henderson
Ferebee, C. G.	Morehead City
*Ferguson, R. T.	Charlotte
Fetzer, P. W.	Madison
Fields, B. T.	Greensboro
*Finch, O. E.	Apex
*Fitzgerald, J. H.	Smithfield
Flack, Roswell E.	Asheville
Flagge, Phillip W.	Jamestown
Fleetwood, Joe E.	Conway
Fleming, G. M.	Cleveland
Fleming, M. I.	Rocky Mount
Fleming, W. L.	Enfield
Fletcher, M. H. (Hon.)	Asheville
Flippin, Jas. M. (Hon.)	Winston-Salem
Flippin, R. E. L.	Pilot Mountain
Flippin, Samuel T.	Siloam
Flowers, C. E.	Zebulon
*Flowers, Clarence A.	Wendell
Flowers, G. E.	Hickory
Floyd, L. D.	Cerro Gordo
Flynt, S. S.	Rural Hall
Foard, F. O.	Connelly Springs
Foard, F. T.	Hickory
Folger, P. B.	Dobson
Folsom, T. W.	Asheville
*Ford, D. E.	New Bern
*Formyduval, T.	Bolton
Fortune, Alex. F.	Greensboro
*Foster, H. H.	Norlina
*Foster, J. F.	Sanford
Fouts, J. H.	Franklin
Fowler, M. L.	Zebulon
Fox, Albert	Lincolnton
Fox, M. F. (Hon.)	Guilford College
Frazer, H. T.	Asheville
*Freeman, J. D.	Wilmington
Freeman, R. A. (Hon.)	Burlington
Freeman, R. H.	Raleigh
Frizzelle, M. T.	Ayden
Frye, Glenn R.	Hickory
*Furman, Wm. H.	Henderson
Furr, Wm. C.	Sandy Ridge
*Futrell, L. M.	Murfreesboro
Futrell, W. E.	Morganton
Gage, L. G.	Charlotte
Gainey, John W.	Fayetteville
Gallant, Robt. M.	Charlotte
Galloway, W. C. (Hon.)	Wilmington
Gambill, I. S.	North Wilkesboro
Gamble, J. F.	Lincolnton
*Gamble, J. R.	Lincolnton
Gambrell, Grover C.	Mooresville
Gardner, G. D.	Asheville
*Garren, R. H.	Monroe
Garrenton, Cecil	Bethel
Garrett, F. B.	Rockingham
*Garrett, F. J.	Rockingham
*Garrison, D. A.	Gastonia
Garriss, F. H.	Lewiston
Garvey, R. R.	Elkin
Gary, R. H.	Murfreesboro
Gaul, Jno. Stuart	Charlotte
Gaw, L. B.	Greensboro
Gayle, Edward M.	Richmond, Va.
*Geddie, K. B.	Raeford
Gentry, Geo. W.	Timberlake
Gibbon, James	Charlotte
*Gibbon, Robert L. (Hon.)	Charlotte
Gibbs, E. W.	Shelby
Gibbs, N. M.	New Bern
Gibson, John S.	Gibson
Gibson, L. O.	Statesville
*Gibson, M. R.	Raleigh
Gill, Robt. J.	Henderson
Gilbreath, F. H.	North Wilkesboro
Gilmer, Chas. S.	Greensboro, Rt. 6
Gilmore, W. D.	Indianopolis, Ind.

Name	*Address*
Ginn, Theo. L.	Goldsboro
Glascock, J. H.	Greensboro
Glenn, Henry F.	Gastonia
*Glenn, Lucius N.	Gastonia
Godwin, G. C.	Biltmore
Gold, Ben	Shelby
Gold, Chas. F.	Ellenboro
Gold, G. M.	Shelby, Rt. 5
*Goley, Wm. Rankin (Hon.)	Graham
Goley, Wm. Roffin	Shallotte
*Goode, T. V.	Statesville
Goodman, A. B.	Lenoir
*Goodwin, A. W. (Hon.)	Raleigh
Goudelock, Jno. J.	Monroe
Gouge, A. E.	Bakersville
Gouger, Geo. J.	Concord
Gove, Anna M.	Greensboro
*Grady, Jas. C.	Kenly
Grady, Leland V.	Wilson, Rt. 2
Grady, Wm. Earle	Tryon
Graham, Benj. R.	Wilmington
Graham, J. A.	Kansas City, Mo.
Graham, Joseph	Durham
Graham, Wm. A. (Hon.)	Charlotte
*Grantham, Wm. L.	Asheville
Gray, Eugene P.	Winston-Salem
Grayson, C. S.	High Point
*Green, Thos. M.	Wilmington
*Green, Wm. W.	Tarboro
*Greene, Arthur W.	Ahoskie
Greene, J. C.	Greenville
*Greene, Jos. B.	Asheville
Greenwood, A. B.	Asheville
Greenwood, S. E.	Fletcher
Grier, Chas. T.	Carthage
*Griffin, J. A. (Hon.)	Clayton
*Griffin, M. A.	Asheville
Griffin, W. R.	Asheville
Griffis, Maj. Frank C.	Ft. Bragg
*Griffith, F. W.	Asheville
Griffith, L. M.	Asheville
Grigg, W. T.	Lawndale
Griggs, John B.	Elizabeth City
Griggs, W. T.	Poplar Branch
Grimes, W. L.	Winston-Salem
*Hackney, Ben H.	Lucama
Hagaman, J. B.	Todd
*Halford, Jos. W.	Lillington
Hall, James S.	Wilmington
*Hall, J. Clegg	Albemarle
Hall, P. B.	Pembroke
Hambrick, Robt. T.	Roxboro
*Hamilton, John H.	Wilmington
Hammock, J. C.	Walkertown
Hamrick, T. G.	Shelby
*Hand, Edgar H.	Pineville
Hanes, F. M.	Winston-Salem
Hanes, J. L.	Pine Hall
Harbison, J. W.	Shelby
*Hardee, Parrott R.	Stem
*Hardee, W. P.	Durham
*Harden, Graham	Burlington
Harden, R. N.	Greensboro
*Hardin, E. R.	Lumberton
Hardin, R. H.	Boone
*Hardison, Wm. H.	Creswell
Hardy, Ira M.	Kinston
*Hargrove, W. F.	Kinston
Harper, J. H.	Snow Hill
Harper, W. T.	Southern Pines
Harrell, Geo. N.	Murfreesboro
*Harrell, S. N.	Tarboro
Harrill, L. B.	Caroleen
Harris, Arthur G.	Fairfield
Harris, C. F.	Ansonville
*Harris, F. R. (Hon.)	Henderson
Harris, John H.	Franklinton
Harrison, Edmund	Greensboro
*Harrison, H. H.	Asheville
Harriss, Andrew H.	Wilmington
Hart, E. R.	Wilmington
Hart, Jno. E.	Wadesboro
Hartsell, F. E.	Oakboro
Hartsell, J. A.	Concord
*Hatcher, M. A.	Hamlet
Hathcock, Thos. A.	Norwood
Harvey, W. W.	Greensboro
Hayes, L. O.	Fremont
Hayes, R. B.	Hillsboro
Hays, A. H.	Fairmont
Hays, B. K.	Ft. Lyon, Colo. (Granville Co.)
Haywood, Hubert (Hon.)	Raleigh
*Haywood, Hubert B., Jr	Raleigh
*Hayworth, C. A.	Asheboro
Head, W. T.	Campobello, S. C., Rt. 4 (Rutherford Co.)

Name	*Address*
*Hege, J. Roy	Clemmons
Heilig, Herman G.	Salisbury
Helsabeck, C. J.	Germanton
Helsabeck, R. S.	Mizpah
*Hemingway, J. D.	Bethel
Henderson, C. C.	Mount Olive
Henderson, Jno. P.	Swansboro
Henderson, R. B.	Franklinton
Henderson, S. McD.	Charlotte
*Henderson, T. B.	Goldsboro
Henry, T. B.	Rockingham
Herbert, Fred L.	Andrews
Herbert, Wm. P.	Asheville
Herring, Benj. S.	Wilson
*Herring, R. A.	Greensboro
Herring, W. C.	Parsons, Kas. (Meck. Co.)
Hiatt, H. B.	High Point
Hickman, Ray	Durham
Hicks, Calvin S.	Durham
Hicks, I. F.	Dunn
Hicks, Romeo	Henrietta
*Hicks, V. M.	Raleigh
Highsmith, Chas.	Dunn
*Highsmith, J. D.	Fayetteville
*Highsmith, J. F. (Hon.)	Fayetteville
*Highsmith, Seavy	Fayetteville
Highway, S. C.	Murphy
Hill, David J.	Lexington
Hill, J. N.	Murphy
Hill, W. Lee	Lexington, Rt. 4
Hill, Wm. I.	Albemarle
*Hines, E. R.	Rocky Mount
Hipp, Edw. R.	Charlotte
Hipps, A. G. T.	Asheville
Hobgood, J. E.	Thomasville
*Hocutt, Battle A.	Clayton
Hodges, Joseph M.	Cranberry
Hodgin, H. H.	Red Springs
Hoggard, J. T.	Wilmington
Hoggard, Wm. A.	Hertford, Rt. 3
Holden, E. C.	High Point
Hollingsworth, E. M.	Mount Airy
*Hollingsworth, E. T.	Clinton
Hollingsworth, R. E.	Mount Airy
Hollister, Wm.	Fayetteville
*Holloway, O. W.	Durham
Holloway, Robt. L.	W. Durham
Hollyday, W. M.	Asheville
*Holt, D. W.	Greensboro Revolution Sta.
Holt, E. E.	Southern Pines
Holt, R. B.	Cherokee
Holt, T. J.	Warrenton
*Holt, Wm. P.	Duke
Holt, Wm. T.	McLeansville
Honnett, Joseph H.	Wilmington
Hood, J. Sidney	Kings Mountain
*Hooker, John S.	Tarboro
Hooks, Thel	Smithfield
Hooper, D. D.	Sylva
Hooper, Jos. W.	Wilmington
Hoover, C. H.	Denver
Hoover, H. R.	Black Creek
*Horton, M. C.	Raleigh
*Horton, W. C.	Raleigh
Houck, Albert F. (Hon.)	Lenoir
House, W. H.	Goldsboro
Houser, E. A.	Shelby
Houser, W. H.	Cherryville
Hovis, L. W.	Charlotte
Howe, Wm. B. W., Jr.	Hendersonville
Howell, W. L.	Ellerbe
Hoyle, Hughes B.	Manteo
Hubbard, Chas. C.	Farmer
Hubbard, Fred C.,	North Wilkesboro
Huffines, T. R.	Asheville
Hughes, F. W. (Hon.)	New Bern
Hunicutt, Wm. J.	Asheville
Hunt, J. F.	Spindale
Hunt, W. Bryce	Lexington
Hunter, J. V.	Asheboro
Hunter, L. W. (Hon.)	Charlotte, Rt. 1
Hunter, M. C.	Huntersville
Hunter, Myers	Charlotte
Hunter, Norman C.	Rockingham
*Hunter, W. B.	Gastonia
Hurdle, S. W.	Winston-Salem
Huston, Jno. W.	Asheville
Hutchins, E. M.	North Wilkesboro
Hutchinson, S. S.	Bladenboro
Hyatt, A. L.	Kinston
Hyatt, Fred C.	Greensboro
Ingram, Chas. B. (Hon.)	Mt. Gilead
Irwin, Hammer C.	Pocatella, Idaho

Name	*Address*
Irwin, Henderson	Goldsboro
Irwin, J. R. (Hon.)	Charlotte
Ivey, H. B.	Goldsboro
Ivey, R. R.	Biltmore
*Izlar, H. L.	Winston-Salem
Jackson, C. C.	Yeatesville
*Jackson, Walter L.	High Point
*Jacocks, W. P.	New York City (Lincoln Co.)
*James, Albert W.	Hamlet
James, F. P.	Laurinburg
*James, W. D.	Hamlet
Jarboe, Parron	Greensboro
Jarman, F. G.	Roanoke Rapids
*Jenkins, Chas. L.	Raleigh
Jennings, R. G.	Winston-Salem
Jerome, Jas. R.	Wingate
Jett, Samuel G.	Reidsville
Jewett, R. D. (Hon.)	Wilmington
*John, Peter	Laurinburg
Johnson, B. C.	Bunn
Johnson, C. T.	Red Springs
*Johnson, Floyd	Whiteville
Johnson, Geo. W.	Wilmington
Johnson, H.	Pink Hill
*Johnson, Henry H.	Louisburg
Johnson, John B.	Old Fort
*Johnson, N. M. (Hon.)	Durham
Johnson, R. Lee	Gastonia
Johnson, Robt. W.	Apex
*Johnson, Thos. C.	Lumberton
Johnson, W. A., Reidsville, R. F. D.	
Johnson, W. C.	Canton
Johnson, W. M.	Winston-Salem
Johnston, J. G.	Charlotte
Johnston, W. W.	Manteo
Jonas, John F.	Marion
Jones, A. G. (Hon.)	Walnut Cove
*Jones, Arthur O.	Greensboro
Jones, Beverly N.	Winston-Salem
Jones, Carey C.	Apex
Jones, Clara E.	Goldsboro
*Jones, C. M. (Hon.)	Grimesland
Jones, J. Walter	Boone
*Jones, R. Duval	New Bern
Jones, Thomas J.	Lansing
Jones, T. Lester	Lansing
*Jones, Wm. M.	Greensboro
Jordan, Chas. S.	Asheville
*Jordan, T. M. (Hon.)	Raleigh
*Jordan, Wm. S.	Fayetteville
*Judd, Eugene C.	Raleigh
*Judd, James M.	Varina
*Julian, Chas. A. (Hon.)	Thomasville
Justice, Gaston B.	Marion
*Justice, Z. K.	Davidson
Kapp, Henry H.	Winston-Salem
Keiger, Jas. A.	Greensboro
*Keiger, O. R.	Winston-Salem
Kellam, J. W.	Asheville
Kendrick, R. L.	Elizabeth City
Kennedy, Geo. W.	Beulaville
Kennedy, John P.	Charlotte
Kent, Alfred A.	Lenoir
Kernodle, Chas. E.	Elon College
Kerns, T. C.	Durham
*Kerr, Jas. E.	Winston-Salem
Kerr, John D.	Clinton
Kibler, W. H.	Morganton
Killian, P. B.	Hayesville
Killian, R. B.	Lincolnton
King, Edward	Asheville
*King, Parks M.	Charlotte
King, Richard M.	Concord
*Kinlaw, W. B.	Sanatorium
Kinsman, Henry F.	Hamlet
Kirby, Guy S.	Marion
Kirk, W. R.	Hendersonville
*Kirksey, James J.	Morganton
Kirksey, W. A.	Hope Mills
Kiser, W. C.	Reepsville
*Kitchin, Thurman D.	Wake Forest
Klutz, A. F.	Maiden
Klutz, P. J.	Maiden
*Kluttz, Dewitt	Washington
*Knight, J. B. H. (Hon.)	Williamston
Knight, Wm. P.	Greensboro
Knoefel, A. E.	Black Mountain
*Knowles, D. L.	Rocky Mount
*Knox, A. W. (Hon.)	Raleigh
*Koonce, S. Everett	Wilmington
*Kornegay, Lemuel W., Rocky Mount	
Lackey, F. H.	Shelby
Lackey, M. A.	Winston-Salem
Lafferty, Robt. H.	Charlotte
*Lambert, W. L.	Asheboro
Lamm, Isaac W.	Lucama

Name	*Address*
*Lancaster, F. J.	Lexington
Lancaster, R. Mc.	Mt. Airy
Landen, J. F.	Chinquapin
*Lane, John L.	Rocky Mount
*Lane, P. P.	Wilson
Lapham, Mary E.	Highlands
Large, H. Lee	Rocky Mount
Larkin, E. W.	Weldon
*Lassiter, C. L.	Fremont
Lassiter, H. G.	Weldon
Latham, Jos. R.	New Bern
*Laton, Jas. F.	Albemarle
*Lattimore, E. B.	Shelby
Laughinghouse, Chas. O'H. (Hon.)	Greenville
*Lawrence, B. J.	Raleigh
*Lawrence, Chas. S.	Winston-Salem
Lawson, R. B.	Chapel Hill
Leak, Wharton G.	East Bend
*Ledbetter, Jas. McQ.	Rockingham
Lee, J. Marshall	Newton Grove
Lee, Lawrence V.	Lattimore
Lee, R. E.	Lincolnton
Lee, S. E.	Sanatorium
Lee, S. J. P.	Benson
Leggett, K. (Hon.)	Hobgood
Leggett, V. W.	Hobgood
*Leinbach, Robt. F.	Charlotte
Lentz, C. M.	Albemarle
*Lewis, Geo. W.	Wilson
Lewis, H. W. (Hon.)	Jackson
*Lewis, Richard H. (Hon.)	Raleigh
*Lewis, S. V.	Greensboro
*Lilly, Jas. M.	Fayetteville
Linney, R. Z.	Charlotte
*Linville, A. Y.	Winston-Salem
*Linville, W. C.	Goldsboro
Lister, E. W.	Weeksville
Lister, J. L.	Jackson
Livingston, E. A.	Gibson
Lloyd, B. B.	Chapel Hill
*Locke, Eva M.	Greensboro
Lockett, Everett A.	Winston-Salem
Logan, F. W. F.	Rutherfordton
Long, Benj. L. (Hon.)	Hamilton
*Long, Benj. Leroy	Glen Alpine
Long, D. T.	Hurdle Mills
Long, Edgar M.	Hamilton
*Long, E. F.	Raleigh
Long, Fred Y.	Catawba
Long, Glenn	Newton
Long, H. F. (Hon.)	Statesville
*Long, J. W. (Hon.)	Greensboro
Long, R. H.	Morganton
Long, T. W. M.	Roanoke Rapids
*Long, V. McK.	Winston-Salem
Long, Walter T.	Roxboro
Looney, J. J. W.	Rocky Mount
Lord, Marjery J.	Black Mountain
Love, Bedford E.	Roxboro
Love, Wm. M.	Unionville
Lovelace, Thos. C.	Henrietta
*Lovill, Robt. J.	Mount Airy
*Lowery, Jno. R.	Raleigh
Lubchenko, N. E.	Harrisburg
Lutterloh, I. Hayden, Jr.	Sanford
Lutterloh, I. H., Sr.	Sanford
Lyday, Abram E.	Penrose
Lyday, C. E.	Gastonia
Lyday, Wm. Monroe	Brevard
Lyle, S. H.	Franklin
Lynch, Geo. B.	Brevard
Lynch, J. M.	Asheville
Lyon, B. R.	Greensboro
*Lyon, E. H.	Bahama
Lyons, Henry Wise	Windsor
*MacConnell, John W.	Davidson
*MacFayden, Paul R.	Concord
MacKethan, D. G.	Fayetteville
MacKethan, John A.	Fayetteville
*MacNider, Wm. deB.	Chapel Hill
MacPherson, G. S.	Asheville
*MacRae, J. D.	Asheville
McAdams, C. R.	Belmont
*McAndrew, P. H.	Ft. Bragg
*McAnally, Wm. J.	High Point
*McBrayer, L. B.	Southern Pine
*McBrayer, R.	Shelby
McBryde, M. H.	Reidsville
*McCain, P. P.	Sanatorium
*McCain, Wm. R.	High Point
McCall, A. C.	Asheville
*McCampbell, John	Morganton
*McClees, E. C.	Elm City
McClees, Jas. E.	Creswell
McClelland, J. O.	Maxton
McCombs, C. J.	Gastonia

Name	*Address*
McCotter, St. Elmo	Bayboro
McCracken, C. M.	Fairview
*McCracken, J. R.	Waynesville
McCuiston, A. M.	Richlands
McDade, B. B.	Corbett, Rt. 1
McDaniel, L. E.	Lasker
McDonald, A. A.	Jackson Springs
McDowell, F. C.	Zebulon
McDuffie, W. N.	Hemp
McElwee, Ross S.	Statesville
*McFadyen, O. L.	Fayetteville
*McGeachy, R. S.	Kinston
*McGee, Jas. W. (Hon.)	Raleigh
McGehee, Jno. Wm.	Reidsville
McGoogan, Benj. J.	McFarlan
*McGougan, J. V.	Fayetteville
McGowan, Claudius	Plymouth
McIntosh, D. M.	Old Fort
McIntosh, Leland C.	Henderson
McIntosh, W. R.	Roberdell
McIver, Lynn	Sanford
*McKay, H. W.	Charlotte
McKay, Jos. F.	Buies Creek
*McKay, W. P.	Fayetteville
*McKee, John S.	Raleigh
McKenzie, B. W.	Salisbury
*McKenzie, Wm. W. (Hon.)	Salisbury
*McLaughlin, C. S.	Charlotte
McLaughlin, J. E.	Statesville
McLean, Allen	Wagram
McLean, Chas. E.	Gastonia
*McLean, John W.	Godwin
McLean, Peter	Laurinburg
McLemore, Geo. A.	Clayton, R. F. D.
McLeod, A. H.	Aberdeen
McLeod, G. M.	Carthage
McManus, H. F.	Matthews
McManus, W. L.	Greensboro
McMillan, B. F. (Hon.)	Red Springs
McMillan, J. M.	Candor
McMillan, R. D.	Red Springs
McMillan, W. D. (Hon.)	Wilmington
*McNairy, Caroline	Lenoir
*McNairy, C. Banks	Kinston
*McNeill, Jas. W. (Hon.)	Fayetteville
McPhail, L. D.	Charlotte
*McPherson, C. W.	Burlington
McPherson, R. G.	Saxapahaw
*McPherson, S. D.	Durham

Name	*Address*
*Macon, G. H.	Warrenton
*Mahoney, A. F.	Monroe
Mallett, E. P.	Hendersonville
Malloy, S. A.	Yanceyville
Malone, James E.	Louisburg
Maness, J. M.	Ellerbe
*Mangum, C. P.	Kinston
*Mann, I. Thurman	High Point
Mann, S. M.	Moyock
Mann, Thos. A.,	Jacksonville, Ill. (Hyde Co.)
Manning, I. H.	Chapel Hill
*Manning, John M. (Hon.)	Durham
Mariner, N. B.	Belhaven
Marlowe, W. A.	Walstonburg
Marr, M. W.	Pinehurst
Marriott, Henry B.	Battleboro
Marsh, Frank B.	Salisbury
Marshall, Maj. Thos. R.	Ft. Bragg
Martin, J. A.	Lumberton
Martin, J. F.	Benson
Martin, J. H.	Red Oak
Martin, J. W.	Roanoke Rapids
Martin, Lester P.	Mocksville
Martin, Moir S.	Mt. Airy
Martin, Sydnor L.	Leaksville
Martin, W. C.	Mocksville
Martin, Wm. F.	Charlotte
Martin, W. J.	Davidson
Matheson, Jas. P.	Charlotte
Matthews, Jas. O.	Clinton, R. F. D
*Matthews, M. L.	Sanford
Matthews, Vann M.	Charlotte
Matthews, Wm. W.	Spray
Maxwell, C. S.	Beaufort
Maxwell, H. B.	Whiteville
Maxwell, J. F.	Pink Hill
*Mayerberg, I. W.	Selma
Maynard, A. A.	Kerr
Maynard, J. D.	Wadesboro
*Meadows, W. J.	Greensboro
Mebane, W. C.	Wilmington
*Melvin, Wayman C.	Linden
Menzies, H. C.	Hickory
Meriwether, B. M.	Asheville
Merritt, John H.	Woodsdale, R. 2
Michaux, Edward R.	Greensboro
Miles, May S.	Greensboro
Millender, C. W.	Asheville

Name	*Address*
Miller, J. F.	Wilmington
*Miller, Oscar L.	Gastonia
Miller, R. C.	Cramerton
Miller, Robert B.	Goldsboro
*Milliken, J. S.	Southern Pines
*Mimms, C. W.	Winston-Salem
Minor, Charles L.	Asheville
Misenheimer, C. A. (Hon.)	Charlotte
*Mitchell, Geo. W.	Wilson
Mitchell, Jesse H.	Ahoskie
Mitchell, Paul H.	Ahoskie
Mitchell, R. C.	Mt. Airy
Mitchell, W. F.	Shelby
Mitchener, J. S.	Raleigh
*Mock, Frank L.	Lexington, R. 3
Monk, Henry L.	Salisbury
Monroe, J. P.	Sanford
*Monroe, W. A. (Hon.)	Sanford
Montague, S. J.	Durham
Montgomery, Harry M.	Burlington
Montgomery, John C. (Hon.)	Charlotte
Montgomery, K. E.	Waynesville
Moore, Alexander W.	Charlotte
Moore, B. D.	Mt. Holly
Moore, Baxter S.	Charlotte
*Moore, Chas. Edward	Greensboro
Moore, Chas. E. (Hon.)	Wilson
Moore, D. B.	Badin
*Moore, Edwin G. (Hon.)	Elm City
Moore, Henry B.	Morven
Moore, Jos. N.	Marshall
Moore, Julian A.	Wilmington
*Moore, K. C.	Wilson
*Moore, Oren	Charlotte
*Moore, R. A.	Winston-Salem
*Moore, T. V.	Acme
Moore, W. B.	Brown Summit
*Moore, W. Houston	Wilmington
Moore, Wm. James	Asheboro
Moorer, M. P.	Asheville
Morefield, R. H.	Westfield, R.F.D. 1
Morgan, B. E.	Asheville
*Morrill, D. S.	Farmville
Morrill, Jenness	Falkland
Morris, Carlyle	Maxton
*Morris, Geo. B.	Goldsboro
*Morris, Jos. A.	Oxford
Morrow, Wm. C.	Andrews
Morton, J.	Faison
Moseley, Chas. W.	Greensboro
Moseley, H. P.	Farmville
Moser, W. D.	Burlington
*Mudgett, W. C.	Southern Pines
Munroe, H. Stokes	Charlotte
*Munroe, J. P. (Hon.)	Charlotte
Munt, H. F.	Winston-Salem
Murchison, D. R.	Wilmington
*Murphy, D. P.	Rutherfordton
*Murphy, John G.	Wilmington
*Murphy, W. B.	Snow Hill
*Myers, Alonzo	Charlotte
*Myers, John Q.	Charlotte
Myers, R. W.	Fullers, R. 1
*Nalle, B. C.	Charlotte
Nance, C. L.	Charlotte
Nance, Geo. B.	Monroe
*Nash, J. Fred	St. Pauls
*Neal, John W.	Monroe
*Neal, Kemp P.	Raleigh
*Neal, Paul N.	Raleigh
Nelson, R. J. (Hon.)	Robersonville
Nesbitt, Charles T.,	Akron, Ohio, (New Hanover Co.)
Newbern, J. M.	Jarvisburg
*Newby, G. E.	Hertford
*Newell, H. A.	Henderson
Newell, J. O.	Louisburg
Newell, Leone B.	Charlotte
*Newman, Harold H.	Salisbury
*Newton, Howard L.	Wilmington
Nichols, Alvin A.	Sylva
*Nichols, Austin F.	Roxboro
Nichols, Asbury S.	Sylva
*Nichols, Rhodes E.	Durham, R. 8
Nicholson, B. M.	Enfield
*Nicholson, J. L.	Washington
Nicholson, N. G., Jr.	Mt. Gilead
Nicholson, P. A. (Hon.)	Washington
Nicholson, S. T. (Hon.)	Washington
*Nisbet, D. Heath	Charlotte
Nisbet, Walter O.	Charlotte
*Noble, R. J. (Hon.)	Selma
*Noble, R. P.	Raleigh
*Nobles, Jos. E. (Hon.)	Greenville
Noell, R. H.	Rocky Mount
Nolan, J. V.	Kannapolis
*Norburn, C. S.	Asheville
Norfleet, E. P.	Roxobel
Norfleet, L. E.	Tarboro

Name	*Address*
Norman, J. S.	Columbia
*Norris, Henry	Rutherfordton
Northington, J. M.	Charlotte
Nowell, S. C.	Hickory
Oates, George	Grover
Oates, W. C.	Belmont
*O'Briant, A. L.	Cameron
Ogburn, H. H.	Greensboro
*Olive, P. W.	Fayetteville
*Oliver, A. S.	Benson
Orr, Chas. C.	Asheville
Orr, C. V.	State Farm, Halifax
Orr, P. B.	Asheville
Orr, W. J. B.	Rocky Mount
*Outland, C. L.	Greenville
Pace, K. B.	Greenville
Packard, F. S.	Norlina
Packard, G. H.,	
Meredith, N. H.	(Madison Co.)
*Paddison, J. R.	Kernersville
*Page, B. W.	Maysville
Palmer, B. H.	Shelby
Palmer, Horace	Hollister
*Palmer, R. W.	Gulf
Parker, Clifton G.	Woodland
*Parker, C. P.	Seaboard
Parker, James R.	Clinton
Parker, John Rainey	Burlington
Parker, O. L.	Clinton
*Parker, Paul G.	Jackson
Parker, S. F.	Mount Olive
Parker, Walter R.	Woodland
Parrott, Albert DeK.	Kinston
*Parrott, Jas. M.	Kinston
Parrott, M. C.	Kinston
*Parrott, Wm. T.	Kinston
Parry, Leo D.	Charlotte
Parsons, W. H.	Charlotte
Patchin, D. F.	Rosemary
*Pate, F. J.	Greensboro
Pate, Jas. G.	Gibson
Patrick, Geo. R., Jr.	Bessemer City
Patrick, L. N.	Gastonia
Patterson, Jno. A.	Concord
Patterson, Reid	Charlotte
Payne, R. L.	Monroe
Pearson, Raymond	Monroe
Peck, Edward J.	Hot Springs
Peek, W. A.	Ramsaytown
Peek, David E.	Cullowhee
*Peeler, Clarence N.	Charlotte
Peeler, John H.	Salisbury
Peery, Vance P.	Kinston
Peete, C. H.	Warrenton
Pemberton, Wm. D. (Hon.)	Concord
Pendleton, Wilson	Asheville
*Pepper, Jno. Kerr	Winston-Salem
Perkins, David R.	Marshville
Perkins, Jno. R.	Winston-Salem
*Perry, D. R.	Southern Pines
Perry, E. M.	Rocky Mount
Perry, H. B.	Valle Crucis
Perry, H. G.	Louisburg
Person, Edgar C.	Pikeville
*Person, J. B.	Selma
*Person, T. E.	Stantonsburg
Peters, W. A.	Elizabeth City
*Peterson, C. A.	Spruce Pine
Peterson, J. M.	Spruce Pine
Peterson, W. C.	Wilmington
Petrie, Robt. Wm.	Charlotte
Petteway, Geo. H.	Charlotte
*Pfohl, Samuel F.	Winston-Salem
Pharr, Wm. W. (Hon.)	Charlotte
*Phifer, Edward M.	Morganton
*Phillips, C. C.	Charlotte
Phillips, C. H.	Thomasville
*Phillips, J. W.	Lillington
Phillips, M. D. (Hon.)	Dalton
Pickett, John A.	Burlington, R.F.D.
*Picot, L. J. (Hon.)	Littleton
Pierce, S. B.	Weldon
Pittman, H. L.	West Durham
*Pittman, R. L.	Fayetteville
Pitts, W. I.	Lenoir
Pollard, W. B.	Winton
Pollock, Raymond	New Bern
Poole, Claud T.	St. Pauls
Pope, Henry T.	Lumberton
Poston, J. Lewis	Statesville
*Powell, H. H.	Stantonsburg
Powell, Jesse A.	Harrellsville
*Pressly, Geo. W.	Charlotte
Pressly, J. M.	Belmont
Price, H. L.	Fairmont
Pritchard, A. T.	Asheville
Pritchard, Jno. L.	Windsor
Pritchett, H. W.	Reidsville

Name	*Address*
Proffitt, Thos. J.	Elk Park
Proctor, I. M.	Raleigh
Pruitt, G. C.	Monroe
Pugh, Chas. H.	Gastonia
Purdy, J. J.	Oriental
Purefoy, Geo. W. (Hon.)	Asheville
*Putney, R. H.	Elm City
Putney, W. R.	Littleton
*Query, Richard Z.	Charlotte, R.F.D.
Quickel, Thos. C.	Gastonia
Quillen, Emile B.	Rocky Mount
Quinn, Robert F.	Magnolia
*Raby, J. G.	Tarboro
Rainey, W. T.	Fayetteville
Ramsey, James G.	Salisbury
Rankin, P. R.	Mount Gilead
Rankin, R. B.	Kannapolis
Rankin, S. W.	Concord
*Rankin, Watson S.	Raleigh
Ranson, J. Lester	Charlotte
Ray, F. L.	Charlotte
Ray, John B.	Leaksville
Ray, O. L.	Raleigh, Rt. 1
Ray, R. C.	Beaver Creek
Reaves, W. P.	Greensboro
Redding, Alex. H.	Cedar Falls
*Redfern, T. C.	Winston-Salem
Reed, D. H.	Kenansville
Reed, John F.	Concord
Reeves, A. F.	Asheville
Reeves, R. J.	Leicester
*Register, F. M.	Raleigh
Reid, Geo. P.	Forest City
Reid, James W.	Lowell
*Reitzel, C. E.	High Point
Reynolds, C. V.	Asheville
Reynolds, T. F.	Canton
Rhodes, James S.	Wiliamston
Rhyne, Robt. E.	Gastonia
Richardson, Jas. C.	Monroe
Richardson, R. W.	Salisbury
Ricks, Leonard E.	Fairmont
Riddle, J. B.	Morganton
Riggsbee, A. E.	Morrisville
Ring, Joseph W.	Elkin
Ringer, Paul H.	Asheville
*Roberson, Charles	Greensboro
*Roberson, Foy	Durham
Roberson, Geo. B.	Greensboro
Roberson, Mike	Durham
Roberts, Frank	Marshall
Roberts, H. C.	Coats
Robertson, James F.	Wilmington
Robertson, J. N.	Fayetteville
Robinson, J. D.	Wallace
Robinson, W. F.	Mars Hill
Robinson, W. J.	Creston
*Rodgers, W. D.	Warrenton
*Rodman, J. C.	Washington
Rodwell, John W.	Mocksville
*Rogers, Jas. Rufus	Raleigh
Rogers, W. A.	Franklin
*Root, Aldert S.	Raleigh
Rose, A. H.	Smithfield
Rose, David J.	Goldsboro
*Ross, Geo. H.	East Durham
*Ross, Otho B.	Charlotte
Ross, Robt. D.	Wadesboro
*Rosser, R. G.	Vass
*Rousseau, J. P.	Winston-Salem
Rowe, H. B.	Mount Airy
Rowe, R. H.	Hickory
*Royal, Ben F.	Morehead City
Royall, M. A.	Elkin
*Royster, Hubert A.	Raleigh
Royster, S. S.	Shelby
*Royster, Thos. H.	Tarboro
Royster, Thos. S.	Henderson
Royster, W. I. (Hon.)	Raleigh
*Rozier, R. G.	St. Pauls
Rucker, A. A.	Rutherfordton
*Rudisill, J. D.	Cherryville
Russell, Jesse M.	Canton
*Sadler, R. C.	Whiteville
Saine, J. W.	Lincolnton
Saliba, John	Elizabeth City
Saliba, M. M.	Wilson
Salley, E. McQueen	Saluda
*Salmons, H. C.	Elkin
*Salmons, L. R.	Winston-Salem
Sample, R. C.	Hendersonville
Sams, W. A.	Marshall
Sanders, F. H.	Cramerton
Saunders, Jos. H.	Williamston
Saunders, S. A.	Aulander
*Sawyer, Chas. J.	Windsor
Sawyer, James	Asheville

Name	*Address*
Sawyer, W. W.	Elizabeth City
Schallert, P. O.	Winston-Salem
*Schaub, O. P.	Winston-Salem
Schenck, D. R.	Rutherfordton
*Schoenheit, E. W.	Asheville
Schonwald, J. T. (Hon.)	Wilmington
Schoonover, R. A.	Greensboro
Schuler, J. E.	East Durham
*Scott, Charles L.	Sanford
Scott, R. C.	Asheville
Scott, S. F.	Union Ridge
Scruggs, W. H.	Asheville
*Scruggs, W. Marvin	Charlotte
Seay, T. W.	East Spencer
*Sessoms, E. T.	Autryville
Sevier, D. E.	Asheville
Sevier, J. T.	Asheville
Sexton, C. Hector	Dunn
Shafer, Irving E.	Salisbury
Schallert, P. O.	Winston-Salem
*Shamburger, J. B. (Hon.)	Star
*Sharpe, C. R.	Lexington
*Sharpe, F. A.	Greensboro
Sharpe, Frank L.	Statesville
Shaver, W. T.	Badin
Shaw, Lillian B.	Charlotte
Shaw, W. G.	Wagram
Shellum, O. W.	Lowesville
Sherrill, C. L.	Statesville
Shields, Henry B.	Carthage
Shipp, Geo. W.	Newton
Shirley, H. C.	Charlotte
Shohan, Jos.	Greensboro
Shore, Clarence A.	Raleigh
*Shreve, J. R.	Brown Summit
Shuford, Jacob H.	Hickory
Shugart, F. C.	High Point
Shull, J. Rush	Charlotte
*Sidbury, J. B.	Wilmington
Sigman, F. G.	Spencer
Sikes, G. L.	Salemburg
*Sikes, G. T. (Hon.)	Creedmoor
Siler, Fred L.	Franklin
Simmons, John O.	Charlotte
*Simmons, L. L.	Greensboro
Simmons, R. R.	Winston-Salem
Singletary, G. C.	Clarkton
Sink, C. S.	N. Wilkesboro
*Sisk, C. N.	Winston-Salem
Skinner, Louis C.	Greenville
Slate, John S.	Winston-Salem
Slate, Wesley C.	Spencer
*Sloan, D. B.	Wilmington
*Sloan, H. L.	Charlotte
Sloan, James M.	Gastonia
Sloan, Wm. H.	Garland
Slocum, R. B.	Wilmington
Sloop, Eustace H.	Crossnore
*Small, Victor R.	Clinton
Smith, A. Jones	Black Creek
Smith, Alick T.	Greensboro
Smith, B. R.	Asheville
*Smith, C. T.	Rocky Mount
Smith, G. M.	Monroe
*Smith, James B.	Pilot Mountain
Smith, James T.	Westfield
Smith, John McN.	Rowland
Smith, Jos. E.	Windsor
*Smith, L. J.	Wilson
*Smith, O. F.	Scotland Neck
Smith, Owen	High Point
Smith, R. A. (Hon.)	Goldsboro
Smith, Robt. W.	Hertford
Smith, Slade A.	Wilmington
Smith, W. F.	Chadbourn
*Smith, Wm. H.	Goldsboro
*Smithwick, Jas. E.	Jamesville
Smoot, J. E.	Concord
Snipes, E. P. (Hon.)	Jonesboro
Somers, L. P.	New Castle
*Sossoman, J. C.	Midland
Sowers, Jacob L.	Lexington
Sowers, Roy G.	Jonesboro
Spainhour, Ellis H.	Winston-Salem
*Sparrow, Thos. D.	Charlotte
*Speas, D. C.	Winston-Salem
Speas, W. P.	Hickory
Speed, J. A.	Durham
Speight, J. A.	Rocky Mount
Speight, John W.	Roper
Speight, J. P.	Rocky Mount
Spencer, Frederick B.	Salisbury
Spencer, Wm. O.	Winston-Salem
Spicer, William	Goldsboro
Spoon, S. C.	Graham
Sprinkle, C. N.	Weaverville
*Spruill, Jos. L.	Jamestown
*Squires, Claude B.	Charlotte
Staley, S. Walter	Rocky Mount
Stamps, Thos. (Hon.)	Lumber Bridge

Name	*Address*
Stancill, Wm. W.	Raleigh
*Stanford, Lois Foote	Durham
*Stanford, W. R.	Durham
Stanley, John H.	Four Oaks
*Stanton, D. A. (Hon.)	High Point
*Stanton, T. M.	High Point
*Starr, H. F.	Greensboro
Steel, Wm. C.	Mt. Olive
Stephens, W. L.	Shiloh
Sterling, W. C.	Winston-Salem
*Stevens, M. L. (Hon.)	Asheville
Stevens, R. L.	Princeton
Stevenson, T. F.	Hickory
*Stewart, H. D.	Monroe
Stewart, J. T., Summerfield, R. F. D.	
Stokes, Jas. E.	Salisbury
Stone, Grady E.	King
*Stone, Wesley M.	Dobson
*Stoner, I. J.	West Durham
Storie, J. G.	Proctor
Street, M. E.	Glendon
Strickland, E. F. (Hon.)	Bethania
Strickland, E. L.	Wilson
Strickland, J. T.	Nashville
*Strickland, W. M.	Wendell
Stringfellow, Jas. L.	Sunburst
*Stringfield, S. L.	Waynesville
Stringfield, Thomas	Waynesville
*Strong, Chas. M.	Charlotte
Strong, Wm. M.	Charlotte
*Strosnider, Chas. F.	Goldsboro
Suiter, W. G.	Weldon
Summerell, E. M. (Hon.)	China Grove
Summers, Chas. L.	Baltimore, Md.
Summey, T. J.	Brevard
Sumner, G. H.	Asheboro
*Sumner, Wm. I.	Randleman
Surles, J. B.	Four Oaks
Sutton, Carl W.	Richlands
*Sutton, Wm. G.	Seven Springs
Swann, Jos. F.	Gastonia
*Sweaney, H. M.	Durham
Sweaney, John	West Durham
*Swindell, C. L.	Beaufort
Swindell, Lewis H.	Washington
Tally, B. T.	Albemarle
Tally, J. S.	Troutmans
*Tankersley, J. W.	Greensboro
*Tate, C. S.	Ramseur
Tate, W. C.	Banner Elk
Tatum, Roy C.	Statesville
Tatum, Walter Lowe	Salisbury
Tayloe, D. T. (Hon.)	Washington
*Tayloe, D. T., Jr.	Washington
Tayloe, Joshua	Washington
*Taylor, F. R.	High Point
*Taylor, H. A.	New Bern
Taylor, H. C.	Charlotte (Chadwick Sta.)
Taylor, James N.	Burlington
*Taylor, James T.	Madison
Taylor, S. R.	Greensboro
Taylor, T. G.	Leaksville
Taylor, W. I.	Burgaw
*Taylor, Wm. L.	Oxford
Taylor, Wm. S.	Mount Airy
*Templeton, James M.	Cary
Tennent, G. S.	Asheville
Terry, J. R.	Lexington
Terry, P. R.	Asheville
Terry, Wm. Calvin	Hamlet
*Thaxton, B. A.	Roxboro
Thigpen, H. G.	Scotland Neck
Thigpen, Wm. J.	Tarboro
*Thomas, J. G.	Greensboro
Thomas, W. Clyde	Siler City
*Thomas, Wm. N.	Oxford
Thompson, A. C.	Asheville
Thompson, A. F.	Troy
Thompson, C. D.	High Point
*Thompson, Cyrus	Jacksonville
Thompson, E. S.	Winston-Salem
Thompson, Hugh A.	Raleigh
Thompson, James M.	Mebane
*Thompson, Joseph W.	Creedmoor
Thompson, S. R.	Charlotte
Thompson, S. W., Jr.,	Morehead City
Thompson, W. A.	Rutherfordton
Thorpe, A. T.	Rocky Mount
Tidwell, J. E.	Andrews
Tillotson, S. F.	King
Tilson, Jacob C.	Marshall
Timberlake, C. V.	Youngsville
Timberlake, R. E.	Youngsville
Todd, L. C.	Charlotte
Toole, A. F.	Asheville
*Townsend, M. L.	Charlotte

Name	*Address*
Trantham, H. T. (Hon.)	Salisbury
Triplett, W. R.	Purlear
Troxler, R. M.	Burlington
Tucker, Jno. H.	Charlotte
Tull, Henry (Hon.)	Kinston
Turlington, H. C.	Dunn
Turner, J. M.	North Wilkesboro
Turner, J. P.	Greensboro
Tuttle, A. F.	Spray
Tuttle, Reuben G.	Winston-Salem
Twitty, John C.	Rutherfordton
Tydeman, F. W. L., Wood River, Ill.	(Mecklenburg Co.)
*Tyner, Carl V.	Smithfield
*Tyson, T. D.	Mebane
Underwood, O. E.	Roseboro
*Upchurch, C. G.	Apex
Upchurch, Robt. T.	Henderson
*Utley, H. H.	Benson
Valk, A. deT.	Winston-Salem
Van Epp, Owen B.	East Laport
Vann, H. M.	Wake Forest
*Van Poole, C. M. (Hon.)	Salisbury
Van Winkle, C. C.	Greensboro
Vaughan, J. C.	Rich Square
Verdery, W. C.	Fayetteville
Vernon, Jas. W.	Morganton
Vestal, Willis J. (Hon.)	Lexington
*Vick, Geo. D.	Selma
*Von Zelinski, Maj. W. F., Ft. Bragg	
Wadsworth, H. B.	New Bern
Wadsworth, Wm. H.	Concord
Wakefield, Harry A.	Charlotte
*Walker, H. D.	Elizabeth City
Walker, J. B.	Gibsonville
Walker, L. A.	Burlington
Walker, L. D.	Charlotte
Walker, L. K.	Ahoskie
*Walker, Walter E.	Burlington
Wall, R. L.	Winston-Salem
*Walters, Chas. M.	Burlington
Ward, I. A.	Belvidere
Ward, Jesse E.	Robersonville
Ward, John LaB.	Asheville
Ward, Vernon A.	Greenville
Ward, Wm. H. (Hon.)	Plymouth
Ware, D. B.	Asheville
Waring, E. S.	Durham
Warren, R. F.	Prospect Hill
Warren, R. L.	Dunn
*Warren, Wm. E.	Williamston
Warrick, L. A.	Goldsboro
Washburn, B. E., Kingston, Jamaica	(Wake Co.)
Watkins, Fonso B.	Morganton
Watkins, Geo. S.	Oxford
*Watkins, G. T.	Durham
Watson, John B.	Raleigh
Watson, Leon	Broadway
*Way, J. Howell (Hon.), Waynesville	
*Weathers, Bahnson	Gastonia
*Weaver, Henry B. (Hon.), Asheville	
Weaver, W. J.	Asheville
Webb, B. G.	Andrews
Webb, S. Edgar	Draper
*Webb, W. P.	Rockingham
Wellborn, Wm. R.	Elkin
Wessell, John C.	Wilmington
West, C. F.	Kinston
West, Geo. H.	Newton
*West, Louis N.	Raleigh
West, Robert M.	Salisbury
West, T. M.	Fayetteville
Weyher, V. E.	Kinston
Wharton, Chas. R.	Ruffin
Wharton, L. D. (Hon.)	Smithfield
*Wheeler, J. H.	Henderson
Whichard, M. P.	Edenton
*Whisnant, Albert M.	Charlotte
Whitaker, A. C.	Julian
Whitaker, F. C.	Enfield
Whitaker, Fred'k A.	Kinston
Whitaker, F. S.	Kinston
*Whitaker, Paul F.	Kinston
*Whitaker, R. B.	Whiteville
White, John W. (Hon.), Wilkesboro	
White, R. A.	Asheville
White, W. M.	Lenoir
Whitehead, John (Hon.)	Salisbury
Whitehead, J. P.	Rocky Mount
*Whitehead, S. L.	Lumberton
Whitehurst, E. B.	Marshallberg
Whitfield, Wm. Cobb (Hon.), Grifton	
Whitley, A. D. N.	Unionville
Whitley, Ayer	Matthews, R. F. D.

Name	*Address*
*Whittington, Jas. B.,	Winston-Salem
Whittington, W. P. (Hon.),	Asheville
*Whittington, W. W.	Snow Hill
Wilcox, J. W.	Laurel Hill
*Wilkerson, Charles B.	Raleigh
Wilkerson, Charles E.	Randleman
*Wilkerson, T. E., Jr.	Raleigh
Wilkes, Grover C.	Sylva
Wilkes, Marcus B.	Laurel Hill
Wilkins, J. C.	Haw River
Wilkins, J. W.	Mount Olive
*Wilkins, R. B.	Raeford
*Wilkinson, C. T.	Wake Forest
*Wilkinson, R. W., Jr.	Wake Forest
*Williams, Albert F.	Wilson
Williams, B. B.	Greensboro
*Williams, Claude B.	Elizabeth City
Williams, Edward J.	Monroe
Williams, James Marcus	Warsaw
*Williams, J. H.	Sanatorium
Williams, John D.	Guilford Station
*Williams, John W.	Washington
*Williams, Lester L.	Mt. Airy
*Williams, L. P.	Edenton
Williams, R. C.	Wallace
Willis, A. P.	Candler
*Willis, B. C.	Rocky Mount
*Willis, H. C.	Wilson
*Willis, W. M.	Greenville
Wilson, Albert R. (Hon.),	Greensboro
Wilson, Archer A.	Oxford
Wilson, Clarence L.	Lenoir
*Wilson, J. E.	Canton, R. F. D.
Wilson, R. G.	Asheville
*Wilson, Robert B.	Newton Grove
Wilson, W. E.	Mooresville
Wilson, W. G.	Princeton
Wilson, W. P.	Madison
Wimberly, G. L.	Rocky Mount
Wingate, G. C.	Charlotte
Winstead, J. A.	Nashville
Wishart, Wm. E.	Charlotte
*Witherspoon, B. J.	Charlotte
Wolfe, H. C.	Greensboro
Wolff, D. R.	Greensboro
Woltz, John L.	Mt. Airy
*Wood, E. J.	Wilmington
Wood, J. W.	Shelby, Rt. 3
Woodard, A. G.	Goldsboro
Woodard, C. A.	Wilson
*Woodard, G. B.	Kenly
Woodcock, John H.	Hendersonville (Mbs. Buncombe Co.)
*Woodruff, Fred G.	High Point
Woodruff, Julian S.	Charlotte
*Woodson, Charles W.	Salisbury
Wooten, Amos Monroe	Pinetops
*Wooten, Floyd P.	Kinston
Wright, James B.	Black Mountain
Wyatt, Wortham	Winston-Salem
Wyatt, Jas. L.	Lilesville
*Wright, J. B.	Raleigh
Wysong, H. C.	Kerr
Yarborough, R. F.	Louisburg
*Yokeley, Raymond V.	Thomasville
York, Alexander Arthur,	Southmont
York, Hugh B.	Williamston
Young, G. M.	Postell
*Young, J. J.	Clayton
Young, L. B.	Wake Forest (R. 3)
Yow, I. A.	Georgeville
Zimmerman, Robt. U.,	Lexington (R. 4)
Zollicoffer, D. B.	Weldon

ROSTER OF MEMBERS FOR 1924

BY COUNTIES

NOTE.—Every physician in the State whose name we could secure has had an opportunity to supply correct information as to his name, postoffice, academic and medical education, date of State License and date State Society was joined. A few did not take advantage of the opportunity, however. Anyone finding an error should report it to the secretary of the society.

ALAMANCE COUNTY SOCIETY

Name and Address	*Licensed*	*Joined State Society*
President: J. A. Pickett, Burlington, Rt. 1; Univ. of Tenn. Coll. of Med., 1894	1894	1904
Secretary: R. E. Brooks, Burlington; Jeff. Med. Coll., 1920	1920	1922
Anderson, Chas. A., Burlington; Coll. P. and S., Balt., 1901	1893	1896
Brittle, Paul C., Burlington; Univ. Coll. of Med., Richmond, 1907	1907	1910
Caddell, S. W., Elon College; Univ. of Tenn., 1892	1892	1914
Ellington, A. J., Burlington; Columbia Univ., 1915	1915	1917
Freeman, Richard A., Burlington, (Hon.); Wash. Univ., 1870	1879	1891
Goley, Wm. R., Graham, (Hon.); P. and S., Balt., 1885	1885	1893
Harden, Graham, Burlington; Univ. of Pa., 1919	1920	1922
Kernodle, Chas. E., Elon College; Univ. of Md., 1911	1911	1920
McDade, B. B., Corbett, Rt. 1, Univ. of Md., 1918	1918	1920
McPherson, C. W., Burlington; Univ. of Md., 1910	1910	1912
McPherson, R. G., Saxapahaw; Univ. of N. C., 1908	1908	1909
Montgomery, Harry M., Burlington; N. C. Med. Coll., 1903	1903	1904
Moser, W. D., Burlington; Univ. of N. C., 1910	1910	1910
Parker, John R., Burlington; Univ. Coll. of Med., Richmond, 1901	1901	1917
Scott, S. F., Union Ridge; Univ. of Pa., 1918	1918	1920
Spoon, S. C., Graham; Univ. of Md., 1918	1918	1920
Taylor, Jas. N., Burlington; Med. Coll. of Va., 1901	1902	1905
Thompson, J. M., Mebane; Univ. of N. C., 1909	1909	1920
Troxler, R. M., Burlington; Univ. of Md., 1914	1914	1915
Tyson, T. D., Mebane; Univ. Coll. of Med., Richmond, 1899	1899	1904
Walker, L. A., Burlington; Univ. Coll. of Med., Va., 1898	1899	1905
Walker, Walter E., Burlington; Med. Coll. of Va., 1903	1903	1905
Walters, C. M., Burlington; Univ. of Md., and P. and S., Balt., 1908	1908	1909
Warren, R. F., Prospect Hill; Atlanta School of Med., 1911	1911	1919
Wilkins, J. C., Haw River; Univ. of Md., 1911	1911	1920

ALLEGHANY COUNTY SOCIETY

President:		
Secretary:		

ANSON COUNTY SOCIETY

President: Robt. D. Ross, Wadesboro; N. Y. Univ., 1890	1890	1912
Secretary: Jno. E. Hart, Wadesboro; P. and S., Balt., 1897	1897	1904
Allen, Chas. I., Wadesboro; Col. Univ., Coll. P. and S., 1913	1913	1922
Ashe, E. S., Wadesboro; P. and S., Balt., 1885	1885	1904
Bennett, Jos. H., Wadesboro; Univ. of Md., 1894	1894	1904
Boyce, J. M., Wadesboro; N. C. Med. Coll., Charlotte, 1903	1906	1923

Name and Address	*Licensed*	*Joined State Society*
Harris, C. F., Ansonville; Jefferson Med. Coll., 1920	1920	1923
McGoogan, Benj. J., McFarlan; Univ. of Md., 1912	1912	1923
Maynard, J. D., Wadesboro; Univ. of N. C., 1908	1908	1922
Moore, Henry B., Morven; Jeff. Med. Coll., 1920	1921	1923
Wyatt, James L., Lilesville; Phila. Med.-Chir. Coll., 1905	1905	1913

ASHE COUNTY SOCIETY

President:	.....	.....
Secretary:	.....	.....
Hagaman, J. B., Todd; Lincoln Mem. Univ., 1915	1915	1915
Jones, Thos. J., Lansing; Lincoln Mem. Univ., 1895	.....	1885
Jones, T. Lester, Lansing; Va. Med. Coll., 1909	1909	1917
Ray, R. C., Beaver Creek; Med. Coll. of Va., 1916	1916	1917
Robinson, W. J., Creston; Univ. Med. Coll., Kansas City, 1904	1907	1917
Colvard, G. T., Jefferson; Med. Coll. of Va., 1924	1924	1924

AVERY COUNTY SOCIETY

President: W. C. Tate, Banner Elk; Lincoln Mem. Univ., 1908	1909	1912
Secretary: W. B. Burleson, Plumtree, Univ. of Md. and Coll. P. and S., Balt., 1915	1915	1916
Hodges, Jos. M., Cranberry; Balt. Med. Coll., 1904	1906	1914
Proffitt, Thos. J., Elk Park; Univ. Louisville Med. Dept., 1903	1903	1914
Sloop, Eustace H., Crossnore; N. C. Med. Coll., 1905; Jeff. 1908	1905	1909

BEAUFORT COUNTY SOCIETY

President: Joshua Tayloe, Washington; Bellevue, 1892	1892	1904
Secretary: Lewis H. Swindell, Washington; Univ. of Pa., 1916	1916	1919
Bonner, J. B., Aurora; Univ. of Md., School Med. and Coll. P. and S., 1918	1918	1920
Brown, E. M., Washington; Bellevue, 1896	1896	1901
Carter, H. W., Washington; Univ. of Va., 1895	1895	1910
Jackson, C. C., Yeatsville; P. and S., Balt., 1893	1893	1896
Kluttz, DeWitt, Washington; Univ. of Pa., 1918	1919	1920
Nicholson, John L., Washington; Univ. of Md. and Coll. P. and S., 1904	1904	1904
Nicholson, P. A., Washington, (Hon.); P. and S., Balt., 1889	1889	1890
Nicholson, Sam T., Washington, (Hon.); P. and S., Balt., 1881	1885	1885
Rodman, J. C., Washington; Bellevue, 1892	1892	1895
Tayloe, D. T., Washington, (Hon.); Bellevue, 1885	1885	1885
Tayloe, D. T., Jr., Washington; Univ. of Pa., 1919	1919	1922
Williams, John W., Washington; Univ. of Md., and Coll. P. and S., 1906	1906	1906

BERTIE COUNTY SOCIETY

President: H. W. Lyon, Windsor; Univ. of Pa. School of Med., 1918	1919	1920
Secretary: E. P. Norfleet, Roxobel; Va. Med. Coll., 1914	1914	1920
Capehart, Alanson, Roxobel	1887	1905

Name and Address	*Licensed*	*Joined State Society*
Evans, L. B., Windsor; Univ. Coll. of Med., 1900	1900	1907
Garriss, Frank H., Lewiston; Jefferson Med. Coll., 1912	1912	1918
Pritchard, John L., Windsor; P. and S., Balt., 1906	1906	1908
Saunders, Sheldon A., Aulander; Jeff. Med. Coll., Phila., 1914	1914	1918
Sawyer, Charles Judson, Windsor; P. and S., Balt., 1895	1895	1897
Smith, Jos. Elmer, Windsor; Va. Med. Coll., 1921	1921	1922

BLADEN COUNTY SOCIETY

President:		
Secretary:		
Bullard, G. F., Elizabethtown; N. C. Med. Coll., 1915	1915	1916
Hutchinson, S. S., Bladenboro; N. C. Med. Coll., 1900	1911	1917
Singletary, G. C., Clarkton; Univ. of Pa. School of Med., 1917	1917	1918

BRUNSWICK COUNTY SOCIETY

President:		
Secretary:		
Goley, Wm. R., Shallotte; Univ. Coll. of Med., Richmond, 1901	1901	1904

BUNCOMBE COUNTY SOCIETY

President: L. W. Elias, Asheville; Columbia Univ. Coll. of Phys. and Surgs., 1903	1906	1907
Secretary: R. A. White, Asheville; Univ. of Cincinnati Coll. of Med., 1918	1920	1921
Adams, J. L., Asheville; Jeff. Med. Coll., 1910	1910	1913
Alexander, Geo., Asheville; Univ. of Louisville Med. Dept., 1913	1920	1921
Ambler, Arthur C., Asheville; Jeff. Med. Coll., 1920	1921	1922
Ambler, Chas. P., Asheville, (Hon.); West. Reserve Univ. School of Med., 1889	1890	1891
Anderson, James G., Asheville; Univ. of N. C., 1906	1907	1910
Archer, Isaac J., Black Mountain; Northwestern Univ. Med. Sch., 1896	1905	1907
Bailey, K. H., Oteen; Univ. of Pa., 1919	1919	1920
Baker, W. E., Arden; Chattanooga Med. Coll., 1908	1915	1916
Battle, Geo. C., Asheville; Univ. of Md., 1912	1912	1912
Beall, L. G., Black Mountain; N. C. Med. Coll., 1906; Univ. of Pa., 1911	1906	1912
Bisch, Louis E., Asheville; Columbia Univ., P. and S., N. Y., 1911	1919	1919
Bown, Herbert H., Asheville; Columbus Med. Coll., 1892	1917	1918
Brewer, J. F., Sr., Asheville; Memphis Hosp. Med. Coll, 1899	1920	1924
Briggs, Henry H., Asheville; Yale Univ. School of Med., 1897	1901	1903
Brookshire, Harley G., Asheville; N. C. Med. Coll., 1905	1905	1907
Broun, Matthew S., Asheville; Columbia Coll. P. and S., 1919	1922	1923
Brownson, Wm. C., Asheville; Univ. of N. Y., 1878	1881	1885
Buckner, J. M., Swannanoa; Univ. of N. C., 1908	1909	1912
Carroll, Jno. L., Asheville; Louisville Med. Coll., 1905	1905	1905
Chambers, P. P., Asheville; Med. Coll. of S. C., 1907	1922	1923
Cheadle, C. M., Asheville; Keokuk Med. Coll., 1898	1919	1921

Name and Address	*Licensed*	*Joined State Society*
Cheesborough, Thos. P., Asheville; Univ. of N. Y., 1891	1891	1900
Clark, Harold S., Asheville; Univ. of Pa., 1922	1922	1924
Cocke, C. H., Asheville; Cornell Univ., 1905	1912	1913
Cocke, E. R., Asheville; Jeff. Med. Coll., 1913	1914	1917
Cocke, Jere E., Asheville; Louisville Med. Coll., 1905	1905	1907
Colby, C. DeW., Asheville; Univ. of Mich., 1892; Army Med. Sch., 1895	1909	1912
Cotten, Clyde E., Asheville; Cleveland Coll. of Phys. and Surgs., 1885	1901	1901
Craddock, Alva B., Asheville; Johns Hopkins, 1918	1923	1924
Denchfield, A. L., Asheville; Univ. and Bellevue Hosp., N. Y., 1905	1904	1916
Dunn, Wm. L., Asheville; Univ. of Mich., 1891	1900	1900
Eckel, O. F., Asheville; Med. Coll. of S. C., 1906	1907	1909
Edwards, B. O., Asheville; N. C. Med. Coll., 1905	1905	1909
Edwards, C. P., Asheville; Lincoln Mem. Univ., 1900	1903	1921
Flack, Roswell E., Asheville; Johns Hopkins, 1913	1913	1914
Fletcher, M. H., Asheville, (Hon.); Bellevue Med. Coll., 1881	1881	1882
Folsom, T. W., Asheville; Univ. of Pa., 1920	1921	1923
Frazer, H. Thompson, Asheville; Columbia Univ. Coll. P. and S., N. Y., 1901	1908	1909
Gardner, Garrett D., Asheville; Lincoln Mem., 1908	1908	1909
Godwin, G. C., Biltmore; Med. Coll. Va., 1915	1915	1920
Grantham, Wm. L., Asheville; N. C. Med. Coll., 1906	1906	1911
Greene, Jos. B., Asheville; Univ. of Va., 1893	1910	1911
Greenwood, A. B., Asheville; Johns Hopkins, 1916	1916	1918
Griffin, M. A., Asheville; Jeff. Med. Coll., 1917	1917	1918
Griffin, W. R., Asheville; Jeff. Med. Coll., 1910	1910	1917
Griffith, F. W., Asheville; Johns Hopkins, 1906	1911	1912
Griffith, L. M., Asheville; Johns Hopkins, 1915	1916	1917
Harrison, H. H., Asheville; Jeff. Med. Coll., 1905	1905	1918
Herbert, Wm. P., Asheville; Univ. of Va., 1907	1910	1911
Hipps, A. G. T., Asheville; Jeff. Med. Coll., 1916	1916	1920
Hollyday, W. M., Asheville; Univ. of Maryland, 1908	1914	1915
Huffines, T. R. Asheville; Univ. of Indiana, 1919	1922	1923
Hunnicutt, Wm. J., Asheville; Univ. of Tenn., 1895	1908	1909
Huston, John Walter, Asheville; Rush Med. Coll., Chicago, 1904	1912	1913
Ivey, R. R., Biltmore; Univ. of Ala., 1909	1921	1921
Jordan, Charles S., Asheville; Univ. of N. Y., 1890	1891	1899
Kellam, John W., Asheville; Univ. of Md., P. and S., 1919	1923	1924
King, Edward, Asheville; Harvard, 1917	1921	1922
Knoefel, A. E., Black Mountain; Univ. of Louisville, 1893	1914	1916
Lord, Marjery J., Black Mountain; Univ. of Mich., 1916	1918	1918
Lynch, J. M., Asheville; Univ. of Md., 1904	1912	1913
MacPherson, G. S., Asheville; Harvard Univ., 1894	1919	1920
MacRae, J. D., Asheville; Univ. of Nashville, 1897	1899	1920
McCall, A. C., Asheville; Univ. of Md., 1910	1910	1912
McCracken, C. M., Fairview; N. C. Med. Coll., 1896	1896	1904
Meriwether, Benj. Morsell, Asheville; U. of Louisville, 1915	1915	1924
Millender, Chas. W., Asheville; Tulane Univ., 1919	1922	1924

Name and Address	*Licensed*	*Joined State Society*
Minor, Chas. L., Asheville; Univ. of Va., 1888	1895	1898
Moorer, M. P., Asheville; Med. Coll. of S. C., 1901	1921	1923
Morgan, B. E., Asheville; Univ. of Tenn., 1917	1921	1921
Norburn, Chas. S., Asheville; Univ. of Va., 1917	1921	1924
Orr, Charles C., Asheville; Univ. of Md., 1904	1904	1905
Orr, P. B., Asheville; Jeff. Med. Coll., 1901	1901	1904
Pendleton, Wilson, Asheville; Univ. of Va., 1908	1919	1920
Pritchard, Arthur T., Asheville; Jeff. Med. Coll., 1905	1905	1907
Purefoy, Geo. W., Asheville, (Hon.); Jeff. Med. Coll., 1876	1884	1884
Reeves, A. F., Asheville; Geo. Washington Univ., 1906	1909	1910
Reeves, R. J., Leicester; Vanderbilt Univ., 1913	1913	1922
Reynolds, C. V., Asheville; Univ. of N. Y., 1895	1895	1895
Richardson, F. H., Black Mountain; Cornell Univ., 1906	1919	1920
Ringer, Paul H., Asheville; Columbia Univ., P. and S., N. Y., 1904	1906	1907
Sawyer, James, Asheville; Bellevue Hospital, 1897	1897	1899
Schoenheit, E. W., Asheville; Jeff. Med. Coll., 1920	1920	1921
Scott, R. C., Asheville; Jeff. Med. Coll., 1902	1916	1919
Scruggs, W. H., Asheville; Univ. of Md., 1913	1915	1917
Sevier, D. E., Asheville; Jeff. Med. Coll., 1895	1895	1899
Sevier, J. T., Asheville; Jeff. Med. Coll., 1895	1895	1899
Smith, B. R., Asheville; Jeff. Med. Coll., 1911	1912	1914
Sprinkle, C. N., Weaverville; Jeff. Med. Coll., 1910	1910	1922
Stevens, M. L., Asheville, (Hon.); Balt. Med. Coll., 1891	1892	1893
Tennent, G. S., Asheville; N. C. Med. Coll., 1894	1894	1898
Terry, P. R., Asheville; Geo. Washington Univ., 1907	1912	1913
Thompson, A. C., Asheville; Georgetown Univ., 1911	1921	1922
Toole, A. F., Asheville; Univ. of Va., 1900	1917	1918
Ward, John LaB., Asheville; Med. Coll. of S. C., 1905	1921	1922
Ware, D. B., Asheville; Univ. of Ga., 1898	1922	1923
Weaver, H. B., Asheville, (Hon.); Washington Univ., Balt., 1872	1881	1882
Weaver, W. J., Asheville; Jeff. Med. Coll., 1898	1897	1915
Whittington, W. P., Asheville, (Hon.); P. and S., Balt., 1882	1882	1882
Willis, A. P., Candler; Univ. of N. C., 1904	1904	1919
Wilson, R. G., Asheville; Univ. of Pa., 1919	1919	1921
Woodcock, John H., Hendersonville; Hosp. Coll. of Med., Louisville, 1892	1894	1899
Wright, J. B., Black Mountain; Univ. of Ga., 1888	1922	1924

BURKE COUNTY SOCIETY

President: B. L. Long, Glen Alpine; N. C. Med. Coll., 1913	1913	1914
Secretary: G. M. Billings, Morganton; Tulane Univ. of La., 1919	1919	1920
Foard, F. O., Connelly Springs; Chicago Coll. Med. and Surg.,		1923
Futrell, W. E., Morganton; Jeff. Med. Coll., 1921	1921	1923
Gayle, Edward M., Richmond, Va.; Univ. of Va., 1902	1902	1902
Kibler, W. H., Morganton; Univ. of Pa., 1914	1914	1918
Kirksey, James J., Morganton; Univ. of Pa., 1921	1921	1923
Long, R. H., Morganton; Jeff. Med. Coll., 1916	1916	1923
McCampbell, John, Morganton; Balt. Med. Coll., 1894	1895	1899
Phifer, Edward M., Morganton; N. C. Med. Coll., 1902	1902	1904

Name and Address	*Licensed*	*Joined State Society*
Riddle, J. B., Morganton; Vanderbilt Univ., 1898	1904	1904
Vernon, Jas. W., Morganton; Jeff. Med. Coll., 1909	1909	1913
Watkins, F. B., Morganton; Jeff. Med. Coll., 1907	1907	1910

CABARRUS COUNTY SOCIETY

President: W. D. Pemberton, Concord, (Hon.); Univ. of Md., 1887	1887	1887
Secretary: J. A. Hartsell, Concord; Jeff. Med. Coll., 1912	1914	1916
Bangle, J. A., Concord; N. C. Med. Coll., 1916	1916	1919
Bunn, J. J., Mt. Pleasant; N. C. Med. Coll., 1912	1913	1915
Burleyson, L. N., Concord; Univ. of Md., 1891	1891	1906
Cauble, H. H., Kannapolis; N. C. Med. Coll., 1909	1909	1911
Gouger, Geo. J., Concord; Univ. of Md., 1891	1891	1899
King, Richard M., Concord; Jeff. Med. Coll., 1903	1903	1907
Lubchenko, N. E., Harrisburg; N. C. Med. Coll., 1915	1915	1916
MacFayden, Paul R., Concord; Univ. Coll. of Med., Richmond, 1901	1901	1904
Nolan, J. V., Kannapolis; Jeff. Med. Coll., 1921	1921	1922
Patterson, John A., Concord; Univ. Coll. of Med., Richmond, 1911	1911	1912
Rankin, R. B., Kannapolis; Tulane Univ. of La., 1917	1920	1922
Rankin, S. W., Concord; Jeff. Med. Coll., 1912	1912	1914
Reed, John F., Concord; Univ. of N. Y., 1893	1907	1912
Smoot, J. E., Concord; Balt. Med. Coll., 1893	1894	1902
Sossoman, J. C., Midland; N. C. Med. Coll., 1915	1917	1918
Wadsworth, Wm. H., Concord; Jeff. Med. Coll., 1911	1913	1913
Yow, I. A., Georgeville; N. C. Med. Coll., 1906	1906	1910

CALDWELL COUNTY SOCIETY

President:		
Secretary:		
Coffey, Lawrence H., Lenoir; Va. Med. Coll., 1906	1906	1913
Corpening, O. J., Granite Falls; Univ. Coll. of Med., Va., 1906	1906	1907
Goodman, A. B., Lenoir; N. C. Med. Coll., 1898	1897	1910
Houck, Albert, Lenoir, (Hon.); P. and S., Balt., 1884	1891	1893
Kent, Alfred A., Lenoir; Jeff. Med. Coll., 1885	1885	1894
McNairy, Caroline, Lenoir; Woman's Med. Coll., Pa., 1917	1917	1919
Pitts, W. I., Lenoir; Univ. of the South, Sewanne, 1903	1911	1913
Storie, J. G., Proctor; Lincoln Mem. Univ., 1898	1898	1908
White, W. M., Lenoir; Coll. P. and S., Atlanta, 1899	1899	1905
Wilson, Clarence L., Lenoir; Chattanooga Med. Coll., 1903	1903	1905

CARTERET COUNTY SOCIETY

President: Chas. L. Swindell, Beaufort; Univ. of Md., 1909	1909	1920
Secretary:		
Bonner, K. P. B., Morehead City; Med. Coll. of Va., 1905	1905	1905
Davis, George, Beaufort; Kentucky School of Med., 1894	1896	1904
Davis, J. J., Atlantic; Univ. of Md., 1891	1891	1916
Duncan, Chas. L., Beaufort; Univ. of Md., 1902	1902	1904
Ferebee, C. G., Morehead City; Med. Coll. of Va., 1902	1904	1904
Maxwell, C. S., Beaufort; Univ. of the South, Sewanee, 1900	1899	1904

Name and Address	*Licensed*	*Joined State Society*
Royal, Ben F., Morehead City; Jeff. Med. Coll., 1909	1909	1909
Thompson, S. W., Jr., Morehead City; Va. Med. Coll., 1913	1915	1922
Whitehurst, E. B., Marshallberg; Med. Coll. of Va., 1917	1917	1920

CASWELL COUNTY SOCIETY

President:		
Secretary:		
Malloy, S. A., Yanceyville; Ky. School of Med., 1897	1898	1903

CATAWBA COUNTY SOCIETY

President: T. C. Blackburn, Hickory; Balt. Med. Coll., 1896	1896	1909
Secretary: W. G. Bandy, Maiden; Vanderbilt Univ., 1908	1912	1916
Campbell, J. R., Newton; Univ. of Md., 1876	1885	1898
Cochrane, J. D., Newton; Univ. of Md., 1912	1912	1923
Flowers, G. E., Hickory; Sou Med. Coll., Atlanta, 1884	1880	1904
Foard, F. T., Hickory; Louisville Med. Coll., 1886	1886	1904
Frye, Glenn R., Hickory; Jeff. Med. Coll., 1921	1921	1923
Klutz, A. F., Maiden; Jeff. Med. Coll., 1917	1917	1920
Klutz, P. J., Maiden	1885	1916
Long, Fred Y., Catawba; Balt. Med. Coll., 1898; N. C. Med. Coll.	1898	1898
Long, Glenn, Newton; N. C. Med. Coll., 1912	1912	1915
Menzios, H. C., Hickory; N. C. Med. Coll., 1894	1894	1899
Nowell, S. C., Hickory; Univ. of Pa., 1921	1922	1924
Rowe, R. H., Hickory; Univ. of Louisville, 1912	1912	1913
Shipp, Geo. W., Newton; Univ. of Med., 1910	1911	1915
Shuford, Jacob H., Hickory; Univ. of Mich., 1901	1902	1902
Speas, W. P., Hickory; Univ. Coll. of Med., Richmond, 1911	1911	1919
Stevenson, T. F., Hickory; Louisville Med. Coll., 1893	1893	1907
West, Geo. H., Newton; N. Y. Univ., 1873	1880	1880

CHATHAM COUNTY SOCIETY

President: R. W. Palmer, Gulf; Louisville Med. Coll., 1890	1891	1891
Secretary: W. B. Chapin, Pittsboro; Univ. of N. C., 1909	1909	1910
Byrd, W. C., Morrisville, Rt. 1; Jeff. Med. Coll., 1923	1923	1924
Cathell, J. E., Moncure; Univ. of Md., 1899	1902	1906
Denson, H. A., Bennett, Central Coll. P. and S., Indianapolis, 1887	1913	1913
Edwards, J. D., Siler City, (Hon.); Louisville Med. Coll., 1887		1894
Gyles, Ronald C., Siler City; Jeff. Med. Coll., 1917	1917	1924
Thomas, W. C., Siler City; Va. Med. Coll., 1917	1917	1920
Upchurch, C. G., Apex; Univ. of Md., 1906	1907	1922

CHEROKEE COUNTY SOCIETY

President: J. N. Hill, Murphy; Univ. of Louisville, 1909	1909	1909
Secretary: N. B. Adams, Murphy; Lincoln Mem. Univ., 1896	1909	1909
Herbert, Fred L., Andrews; Lincoln Mem. Univ., 1904	1912	1912
Highway, S. C., Murphy; Med. Coll. of Ohio, 1885	1904	1898
Morrow, Wm. C., Andrews; Atlantic School of Med., 1909	1909	1909
Tidwell, J. E., Andrews; Chattanooga Med. Coll., 1903	1913	1915

Name and Address	*Licensed*	*Joined State Society*
Webb, B. G., Andrews; Louisville Med. Coll., 1885	1885	1885
Young, G. McD., Postell; Lincoln Mem. Univ., 1916	1917	1918

CHOWAN-PERQUIMANS COUNTY SOCIETY

President:		
Secretary:		
Cason, H. M. S., Edenton; Univ. of Md., 1899	1899	1899
Cox, Thomas A., Hertford; Univ. of Md., 1892	1907	1918
Dillard, Richard, Jr., Edenton, (Hon.); Jeff. Med. Coll., 1879	1880	1880
Mitchener, J. S., Raleigh; Johns Hopkins, 1915	1917	1918
Smith, Robert W., Hertford; Univ. of Md., 1892	1892	1918
Whichard, M. P., Edenton; Univ. of Md., 1910	1910	1918
Williams, L. P., Edenton; Bellevue Med. Coll., 1918	1919	1921
Ward, I. A., Belvidere; Univ. of N. C., 1907	1907	1915

CLEVELAND COUNTY SOCIETY

President: J. W. Harbison, Shelby; Johns Hopkins, 1919	1919	1924
Secretary: W. F. Mitchell, Shelby; Univ. of Md., 1889	1900	1904
Aydlette, Jos. P., Earl; Kentucky University, 1901	1903	1903
Ellis, R. C., Shelby, (Hon.); Balt. Univ. Med. School, 1886		1891
Gibbs, E. W., Shelby; Univ. of N. C., 1907	1907	1918
Gold, Ben, Shelby; P. and S., Balt., 1920	1920	1922
Gold, G. M., Shelby, Rt. 5; Emory Univ. School of Med., 1892		1914
Grigg, W. T., Lawndale; Emory Univ. School of Med., 1891	1904	1901
Hamrick, T. G., Shelby; P. and S., Balt., 1895	1895	1904
Houser, E. A., Shelby; Chattanooga Med. Coll., 1898; Balt. Univ., 1902	1902	1904
Lackey, F. H., Shelby; Univ. of Md., 1915	1915	1920
Lattimore, E. B., Shelby; Bellevue Med. Coll., 1897	1896	1904
Lee, Lawrence V., Lattimore; Emory Univ. School of Med., 1894	1897	1904
McBrayer, R., Shelby; Univ. of Pa., 1916	1916	1917
Oates, George, Grover; Univ. of Louisville, 1894	1902	1904
Palmer, B. H., Shelby; Louisville Med. Coll., 1896	1898	1904
Royster, S. S., Shelby; Lincoln Mem. Univ., 1891	1896	1904
Wood, J. W., Shelby, Rt. 3; Louisville Med. Coll., 1892	1903	1900

COLUMBUS COUNTY SOCIETY

President: T. V. Moore, Acme; Balt. Med. Coll., 1901	1901	1911
Secretary: Floyd Johnson, Whiteville; Memphis Hosp. Med. Coll., 1903	1903	1904
Baggett, Leaman, Tabor; N. C. Med. Coll., 1907	1907	1909
Cox, G. S., Tabor; N. C. Med. Coll., 1911	1911	1914
Crowell, W. H., Whiteville; Univ. of Md., 1895	1895	1908
Floyd, L. D., Cerro Gordo; N. C. Med. Coll., 1911	1911	1912
Formyduval, T., Bolton; Va. Med. Coll., 1919	1920	1922
Maxwell, H. B., Whiteville; Univ. of Md., 1902	1902	1902
Sadler, R. C., Whiteville; N. C. Med. Coll., 1912	1912	1915

Name and Address	*Licensed*	*Joined State Society*
Smith, W. F., Chadbourn; N. C. Med. Coll., 1904	1904	1905
Whitaker, R. B., Whiteville; Univ. Coll. of Med., Richmond, 1912	1912	1913

CRAVEN COUNTY SOCIETY

President: H. A. Taylor, New Bern; Univ. of Ala., 1912	1923	1924
Secretary: Jos. R. Latham, New Bern; Jeff. Med. Coll., 1917	1917	1923
Barker, Christopher R., New Bern; Jeff. Med. Coll., 1909	1909	1924
Caton, Geo. A., New Bern; Va. Med. Coll., 1898	1898	1904
Daniels, R. L., New Bern; Va. Med. Coll., 1912	1912	1919
Duffy, R. N., New Bern; Johns Hopkins, 1906	1907	1908
Ford, D. E., New Bern; Univ. of Mich., 1908	.....	1924
Gibbs, N. M., New Bern; Univ. of Md. and Coll. P. and S., Balt., 1896	1895	1897
Hughes, Francis W., New Bern, (Hon.); Univ. of Pa., 1880	1885	1885
Jones, R. Duval, New Bern; Univ. of Md., 1896	1897	1897
Pollock, Raymond, New Bern; Jefferson Med. Coll., 1899	1900	1900
Wadsworth, H. B., New Bern; Johns Hopkins, 1918	1918	1923

CUMBERLAND COUNTY SOCIETY

President: O. L. McFayden, Fayetteville; N. C. Med. Coll., 1912	1912	1912
Secretary: W. P. McKay, Fayetteville; Tulane Univ., 1916	1916	1921
Allgood, R. A., Fayetteville; Univ. of Md., and Coll. of P. and S., Balt., 1912	1915	1917
Averitt, K. G., Cedar Creek; Balt. Med. Coll., 1893	1893	1902
Brenn, Capt. Chas. E., Fort Bragg; Jeff. Med. Coll., 1916, Army Med. School, 1917	.....	1924
Bullock, Thomas C., Autryville; P. and S., Balt., 1885	1885	1905
Chester, P. J., Fayetteville; N. C. Med. Coll., 1913	1913	1920
Cook, H. L., Fayetteville; Jeff. Med. Coll., 1918	1918	1920
Currie, D. S., Parkton; N. C. Med. Coll., 1906	1906	1907
Duggins, Major P. E., Fort Bragg, Univ. of Va., 1913	.....	1924
Gainey, John W., Fayetteville; Jeff. Med. Coll., 1917	1917	1921
Griffis, Maj. Frank C., Fort Bragg; Ohio Med. Univ., 1896	.....	1924
Highsmith, J. D., Fayetteville; Jeff. Med. Coll., 1918	1918	1920
Highsmith, J. F., Fayetteville, (Hon.); Jeff. Med. Coll., 1889	1889	1893
Highsmith, Seavy, Fayetteville; Univ. Coll. of Med., Richmond, 1901	1901	1902
Hollister, William, Fayetteville	.....	1924
Jordan, Wm. S., Fayetteville; Univ. of N. C., 1906	1906	1907
Kirksey, W. A., Hope Mills; Washington Univ., 1921	1921	1924
Lilly, James M., Fayetteville; Univ. Coll. of Med., Richmond, 1903	1903	1904
MacKethan, D. G., Fayetteville; Univ. Coll. of Med., Richmond, 1899	1899	1899
MacKethan, John Alex., Fayetteville; N. C. Med. Coll., 1901	1901	1903
McAndrews, Lt.-Col. P. H., Fort Bragg; Univ. of Pa., 1893	.....	1924
McGougan, J. V., Fayetteville; Univ. of Md., Coll. of P. and S., 1893	1893	1909
McNeill, Jas. Wm., Fayetteville, (Hon.); Bellevue Med. Coll., 1876	1876	1876

Name and Address	*Licensed*	*Joined State Society*
Marshall, Maj. Thos. R., Fort Bragg; Coll. of P. and S., 1893	1893	1924
Olive, P. W., Fayetteville; P. and S., Balt., 1907	1907	1909
Pittman, R. L., Fayetteville; Jefferson Med. Coll., 1910	1910	1912
Rainey, W. T., Fayetteville; Univ. Coll. of Med., Richmond, 1913	1913	1916
Robertson, J. N., Fayetteville; Med. Coll. of Va., 1923	1923	1924
Verdery, W. C., Fayetteville; Univ. of Ga., 1915	1920	1921
Von Zelinski, Maj. W. F., Fort Bragg; Bennett Med. Coll., Chicago, 1908		1924
West, T. M., Fayetteville; Univ. of Md., 1908	1910	1910

CURRITUCK COUNTY SOCIETY

President: J. M. Newbern, Jarvisburg; Georgetown Univ., 1898	1899	1900
Secretary: S. M. Mann, Moyock, P. and S., Balt., 1895	1895	1904
Cowell, Wm. H., Shawboro; Ky. School of Med., 1893	1909	1911
Griggs, W. T., Poplar Branch; Univ. of Va., 1896	1896	1901

DAVIDSON COUNTY SOCIETY

President: Jas. A. Smith, Lexington; N. C. Med. Coll., 1915	1915	1917
Secretary: F. J. Lancaster, Lexington; Jeff. Med. Coll., 1922	1922	1924
Anderson, Abel, Denton		1904
Buchanan, E. J., Lexington; Univ. of Md., 1892	1892	1900
Clodfelter, C. M., Lexington; P. and S., Balt., 1905	1905	1907
Clyatt, Claude Eugene, Denton; Univ. of Ga., 1911	1923	1924
Dowdy, J. E., Thomasville; Univ. of Md., 1909	1909	1924
Hill, David Joseph, Lexington; P. and S., Balt., 1893	1893	1894
Hill, W. Lee, Lexington, Rt. 4; P. and S., Balt., 1893	1893	1904
Hobgood, J. E., Thomasville; Jeff. Med. Coll., 1907	1907	1917
Hunt, W. Bryce, Lexington; Univ. of Md., 1923	1923	1924
Julian, Chas. A., Thomasville, (Hon.); Louisville Med. Coll., 1888	1891	1892
Mock, Frank Lowe, Lexington, Rt. 3; N. C. Med. Coll., 1908	1908	1911
Perry, D. R., Southern Pines; Jeff. Med. Coll., 1919	1919	1922
Phillips, C. H., Thomasville; Balt. Univ. School of Med., 1892	1893	1911
Sharpe, C. R., Lexington; Jeff. Med. Coll., 1914	1914	1917
Sowers, Jacob L., Lexington; Univ. of Md., 1921	1921	1924
Terry, J. R., Lexington; Univ. of Louisville, 1911	1912	1912
Vestal, Willis J., Lexington, (Hon.); P. and S., Balt., 1883	1885	1893
Yokeley, R. V., Thomasville; N. C. Med. Coll., 1911	1911	1912
York, A. A., Southmont; Chattanooga Med. Coll., 1907	1907	1909
Zimmerman, Robt. U., Lexington, Rt. 4; N. C. Med. Coll., 1901	1901	1904

DAVIE COUNTY SOCIETY

President: W. C. Martin, Mocksville; P. and S., Balt., 1888	1888	1904
Secretary: A. B. Byerly, Cooleemee; Univ. College of Med., Richmond, 1896	1896	1904
Martin, Lester P., Mocksville; Jeff. Med. Coll., 1920	1920	1921
Rodwell, Jno. W., Mocksville; P. and S., Balt., 1895	1895	1896

DUPLIN COUNTY SOCIETY

Name and Address	*Licensed*	*Joined State Society*
President: J. W. Carroll, Wallace; Univ. of Md., 1903	1903	1903
Secretary: R. C. Williams, Wallace; Univ. of Md., 1912	1915	1916
Carr, Ransom Lee, Rose Hill; Balt. Med. Coll., 1907	1908	1909
Farrior, J. W., Warsaw; Univ. of Pa., 1912	1913	1917
Kennedy, Geo. W., Beulaville; Univ. Coll. of Med., Richmond, 1898	1897	1909
Landen, J. F., Chinquapin; Univ. Coll. of Med., Richmond, 1905	1905	1907
Maxwell, J. F., Pink Hill	1886	1917
Morton, J. X., Faison; N. C. Med. Coll., 1915	1915	1922
Quinn, Robert F., Magnolia; N. C. Med. Coll., 1912	1913	1916
Reed, D. H., Kenansville; Geo. Washington Univ., 1901	1904	1917
Robinson, J. D., Wallace; Univ. of Md., 1915	1915	1917
Williams, Jas. M., Warsaw; Univ. of Md., 1902	1902	1902

DURHAM-ORANGE COUNTIES SOCIETY

President: O. W. Hollaway, Durham; Va. Med. Coll., 1901	1901	1917
Secretary: Hickman Ray, Durham; Univ. of Md., 1915	1915	1920
Abernethy, E. A., Chapel Hill; Univ. Coll. of Med., Richmond, 1901; Geo. Wash. Univ., 1903	1901	1914
Adams, C. A., Durham; P. and S., Balt., 1892	1892	1901
Adkins, M. T., Durham; Johns Hopkins, 1907	1915	1916
Baynes, R. H., Durham; Univ. of Md., 1914	1914	1920
Bitting, Numa D., Durham; Jeff. Med. Coll., 1907	1907	1909
Boddie, Needham P., Durham, (Hon.); P. and S., Balt., 1883	1883	1883
Booker, Lyle S., Durham; Va. Univ. Med. Coll., 1908	1910	1911
Boone, W. H., Durham; N. C. Med. Coll., 1902	1902	1910
Bowling, Edwin H., Durham; P. and S., Balt., 1891	1890	1908
Brinkley, H. M., West Durham; Jefferson Med. Coll., 1919	1919	1923
Brooks, B. U., Durham; Univ. of Md., 1905	1905	1907
Bullitt, J. B., Chapel Hill; Univ. of Va., 1897	1914	1915
Campbell, A. S., Durham; Chicago Coll. Med. and Surg., 1917	1923	1924
Coppridge, W. M., Durham; Jeff. Med. Coll., 1918	1919	1920
Darden, O. B., Richmond, Va.; Med. Coll. of Va., 1918	1918	1920
Fassett, Burton W., Durham; Balt. Med. Coll., 1898	1899	1909
Felts, Robert L., Durham; Univ. of Md., 1898	1899	1909
Graham, Joseph, Durham; Univ. of Pa., 1901	1902	1906
Hardee, W. P., Durham; Jeff. Med. Coll., 1912	1912	1924
Hayes, R. B., Hillsboro; Univ. of Md., 1906	1910	1917
Hicks, Calvin S., Durham; Univ. of Md., 1904	1904	1904
Holloway, Robt. Lee, West Durham; Va. Med. Coll., 1893	1893	1901
Johnson, N. M., Durham, (Hon.); Wash. Univ. Sch. of Med., 1877	1879	1879
Kerns, T. C., Durham; Univ. of Pa., 1911	1911	1912
Lawson, R. B., Chapel Hill; Univ. of Md., 1902	1915	1920
Lloyd, B. B., Chapel Hill; Univ. of N. C., 1909	1909	1914
Lyon, E. H., Bahama; Univ. of Md., 1903	1904	1912
MacNider, Wm. deB., Chapel Hill; Univ. of N. C., 1903	1903	1903
McPherson, S. D., Durham; Univ. of Md., 1903	1903	1912
Manning, I. H., Chapel Hill; Long Island, N. Y., Coll. Hosp., 1897	1899	1901
Manning, Jno. M., Durham, (Hon.); Bellevue Med. Coll., 1882	1884	1884

Name and Address	*Licensed*	*Joined State Society*
Montague, S. J., Durham; Bellevue Hosp. Med. Coll., 1872	1880	1922
Nichols, Rhodes E., Durham, Rt. 8; Med. Coll., Richmond, 1890	1890	1904
Roberson, Foy, Durham; Jeff. Med. Coll., 1909	1909	1912
Roberson, Mike, Durham; Va. Med. Coll., 1912	1912	1913
Ross, Geo. H., East Durham; Univ. of Tenn., 1899	1899	1904
Schuler, J. E., East Durham; Med. Coll. of Va., 1914	1920	1922
Speed, J. A., Durham; Jeff. Med. Coll., 1914	1914	1916
Stanford, Lois Foote, Durham; Univ. of Pa., 1921	1923	1924
Stanford, W. R., Durham; Univ. of Pa., 1919	1919	1923
Stoner, I. J., West Durham; Memphis Med. Coll., 1898	1920	1922
Sweaney, H. M., Durham; Univ. of Pa., 1919	1919	1920
Sweaney, John, West Durham; P. and S., Balt., 1886	1888	1916
Waring, E. S., Durham; Harvard, 1918	1922	1923
Watkins, G. T., Durham; Jeff. Med. Coll., 1915	1915	1917

EDGECOMBE COUNTY SOCIETY

President:		
Secretary: John S. Hooker, Tarboro; Emory Univ., 1923	1923	1924
Baker, J. M., Tarboro, (Hon.); Univ. of Md., 1879	1879	1879
Bass, Spencer P., Tarboro; Univ. of Va., 1906	1907	1909
Green, Wm. W., Tarboro; Univ. of N. C., 1908	1908	1910
Harrell, Samuel N., Tarboro; Univ. of Md., 1897	1897	1904
Norfleet, L. E., Tarboro; Columbia Univ. P. and S., 1888	1890	1920
Raby, J. G., Tarboro; Univ. Coll. of Med., Va., 1911	1911	1912
Royster, Thos. H., Tarboro; Univ. Coll. of Med., 1908	1908	1914
Thigpen, William J., Tarboro; Jeff. Med. Coll., 1900	1900	1901
Wooten, Amos Monroe, Pinetops; Univ. of N. C., 1910	1910	1911

FORSYTH COUNTY SOCIETY

President: A. Y. Linville, Winston-Salem; Univ. of N. Y., 1889	1889	1896
Secretary: Leroy J. Butler, Winston-Salem; Va. Med. Coll., 1915	1920	1921
Benbow, J. T., Winston-Salem; N. C. Med. Coll., 1910	1910	1920
Bowers, M. A., Winston-Salem; Tulane Univ., 1911	1911	1914
Browne, Arthur T., Winston-Salem; Memphis Hosp. Med. Coll., 1913	1918	1921
Bynum, John, Winston-Salem, (Hon.); Univ. of N. Y., 1892	1892	1893
Carlton, Romulus L., Winston-Salem; Univ. of Md., 1906	1906	1908
Cooke, G. C., Winston-Salem; Univ. of Md., 1919	1919	1920
Craig, S. D., Winston-Salem; Tulane Univ., 1908	1911	1912
Crawford, W. J., Winston-Salem; Va. Med. Coll., 1922	1922	1923
Dalton, D. N., Winston-Salem, (Hon.); Univ. of N. Y., 1881	1885	1885
Dalton, Wm. N, Winston-Salem; N. C. Med. Coll., 1904	1904	1905
Daugherty, J. E., Brooklyn, N. Y.; Barnes Med. Coll., 1902	1920	1920
Davis, J. M., Winston-Salem; Columbia Univ., 1913	1913	1920
Davis, Thos. W., Winston-Salem; S. C. Med. Coll., 1898	1899	1900
Fearrington, Jos. P., Winston-Salem; Univ. of Md., 1887	1887	1904
Flippin, Jas. M., Winston-Salem, (Hon.); P. and S., Balt., 1884	1885	1910
Flynt, S. S., Rural Hall; P. and S., Balt., 1889	1890	1907

Name and Address	*Licensed*	*Joined State Society*
Gray, Eugene Price, Winston-Salem; Johns Hopkins, 1906	1907	1909
Grimes, W. L., Winston-Salem; Johns Hopkins, 1910	1910	1915
Hammock, J. C., Walkertown; P. and S., Balt., 1895	1895	1908
Hanes, F. M., Winston-Salem; Johns Hopkins, 1908	1916	1917
Hege, J. Roy, Clemmons; Univ. of Md., 1916	1916	1917
Hurdle, S. W., Winston-Salem; Jeff. Med. Coll., 1914	1914	1916
Izlar, H. L., Winston-Salem; Med. Coll. of the State of S. C., 1915	1916	1916
Jennings, R. G., Winston-Salem; N. C. Med. Coll., 1913	1913	1920
Johnson, Wingate M., Winston-Salem; Jeff. Med. Coll., 1908	1908	1911
Jones, Beverley N., Winston-Salem; Va. Med. Coll., 1915	1915	1921
Kapp, Henry H., Winston-Salem; Jeff. Med. Coll., 1901	1901	1904
Keiger, O. R., Winston-Salem; Univ. Coll. of Med., Richmond, 1911	1911	1914
Kerr, Jas. Edwin, Winston-Salem; Univ. of Md., 1897	1898	1898
Lackey, M. A., Winston-Salem; N. C. Med. Coll., 1917	1923	1924
Lawrence, Chas. S., Winston-Salem; Geo. Wash. Univ., 1908	1908	1911
Lockett, Everett A., Winston-Salem; Univ. of Pa., 1902	1904	1904
Long, Vann McKee, Winston-Salem; N. C. Med. Coll., 1906	1906	1911
Mimms, C. W., Winston-Salem; Univ. of Ky., 1914	1916	1917
Moore, R. A., Winston-Salem; N. C. Med. Coll., 1911	1911	1917
Munt, H. F., Winston-Salem; Va. Med. Coll., 1911	1914	1916
Paddison, Jno. R., Kernersville; Univ. of Md., 1902	1902	1913
Pepper, John Kerr, Winston-Salem; P. and S., Balt., 1907	1908	1908
Perkins, J. R., Winston-Salem; Va. Med. Coll., 1904	1910	1917
Pfohl, Samuel F., Winston-Salem; Univ. of Pa., 1894	1898	1898
Redfern, T. C., Winston-Salem; L. I. Med. Coll. Hosp., 1916	1921	1921
Rousseau, J. P., Winston-Salem; Univ. of Md., 1918	1920	1920
Salmons, L. R., Winston-Salem; N. C. Med. Coll., 1912	1912	1916
Schallert, P. O., Winston-Salem; Univ. of Ill., 1904	1911	1912
Schaub, O. P., Winston-Salem; Balt. Med. Coll., 1898	1898	1898
Simmons, R. R., Winston-Salem; Va. Med. Coll., 1917	1923	1924
Sisk, C. N., Winston-Salem; Univ. of Nashville, 1905	1922	1923
Slate, John S., Winston-Salem; Univ. Coll. of Med., Va., 1900	1899	1920
Spainhour, Ellis H., Winston-Salem; Balt. Med. Coll., 1898	1898	1898
Speas, D. C., Winston-Salem, R. F. D.; Univ. of Md., 1911	1913	1924
Spencer, Wm. O., Winston-Salem; Jeff. Med. Coll., 1891	1891	1894
Sterling, W. C., Winston-Salem; Vanderbilt, 1917	1920	1921
Strickland, Edward F., Bethania, (Hon.); Univ. of N. Y., 1887	1887	1893
Summers, Chas. L., Baltimore, Md.; Univ. and P. and S., Md., 1887	1891	1896
Thompson, Edg. S., Winston-Salem; Univ. of N. Y., 1919	1919	1921
Tuttle, Reuben G., Winston-Salem; N. C. Med. Coll., 1909	1909	1913
Valk, A. deT., Winston-Salem; Johns Hopkins, 1910	1913	1914
Wall, R. L., Winston-Salem; Jeff. Med. Coll., 1912	1912	1914
Whittington, Jas. B., Winston-Salem; N. C. Med. Coll., 1911	1911	1913
Wyatt, Wortham, Winston-Salem; Univ. of Pa., 1913	1913	1916

FRANKLIN COUNTY SOCIETY

President: R. F. Yarborough, Louisburg; Geo. Washington Univ., D. C., 1898	1899	1899
Secretary: Harry H. Johnson, Louisburg; P. and S., Balt., 1915	1919	1919

Name and Address	*Licensed*	*Joined State Society*
Beam, H. M., Wood; Columbia Univ., N. Y., 1918	1918	1919
Burt, S. P., Louisburg; P. and S., Balt., 1896	1896	1904
Harris, John H., Franklinton; Bellevue, 1886	1886	1904
Henderson, R. B., Franklinton; Univ. of Md., 1884	1884	1904
Johnson, B. C., Bunn; Univ. of N. C., 1909	1909	1910
Malone, James E., Louisburg; Bellevue, 1875	1885	1904
Newell, J. O., Louisburg; P. and S., Balt., 1910	1910	1912
Perry, H. G., Louisburg; P. and S., Balt., 1915	1915	1916
Timberlake, C. V., Youngsville; Jefferson Med. Coll., 1915	1915	1922
Timberlake, Richard E., Youngsville; Jefferson, 1908	1908	1910

GASTON COUNTY SOCIETY

President: W. B. Hunter, Gastonia; Univ. of Pa., 1911	1911	1920
Secretary: Chas. O. DeLaney, Gastonia; Jefferson, 1919	1919	1922
Adams, Charles E., Gastonia; Univ. of Md., 1878	1885	1904
Anders, McT. G., Gastonia; Md. Med. Coll., 1901	1902	1902
Anderson, Jas. A., Gastonia; Univ. of Ga., 1899	1909	1909
Anthony, J. E., Kings Mountain; Jeff. Med. Asso., Danbridge, 1911	1911	1911
Belk, Geo. W., Gastonia; Atlanta School Med., 1913	1918	1924
Blair, J. L., Gastonia; Emory Univ., 1915	1920	1921
Boyles, M. F., Dallas; N. C. Med. Coll., 1917	1917	1920
Campbell, J. W., Gastonia; P. and S., Balt., 1893	1917	1920
Clinton, Roland S., Gastonia; Univ. of Md., 1914	1914	1920
Dimmett, J. A., Gastonia; Univ. of Ky., 1904	1906	1922
Eddleman, Hall M., Gastonia; Coll. of Phys. and Surgs., Balt., 1886	1886	1904
Garrison, D. A., Gastonia; Louisville Med. Coll., 1896	1896	1900
Glenn, Harry F., Gastonia; P. and S., Atlanta, 1900	1900	1904
Glenn, Lucius N., Gastonia; Univ. of Md., 1897	1897	1904
Hood, J. Sidney, Kings Mountain; Jeff. Med. Coll., 1907	1907	1910
Houser, W. H., Cherryville; N. C. Med. Coll., 1900	1900	1904
Johnson, R. Lee, Gastonia; Jefferson, 1911	1911	1918
Lyday, C. E., Gastonia; Atlanta S. of Med., 1910	1910	1920
McAdams, C. R., Belmont; N. C. Med. Coll., 1912	1912	1916
McCombs, C. J., Gastonia; N. C. Med. Coll., 1905	1905	1908
McLean, Chas. E., Gastonia; N. C. Med. Coll., 1903	1904	1905
Miller, Oscar L., Gastonia; Atlanta Coll. of P. and S., 1912	1921	1922
Miller, R. C., Cramerton; N. C. Med. Coll., 1909	1918	1919
Moore, B. D., Mt. Holly; Med. Coll. of Va., 1915	1915	1921
Oates, W. C., Belmont; Richmond Med. Coll., 1919	1921	1924
Patrick, Geo. R., Jr., Bessemer City; Univ. of Md., 1916	1916	1920
Patrick, L. N., Gastonia; Univ. of Md., 1909	1910	1913
Pressly, J. M., Belmont; N. C. Med. Coll., 1915	1915	1920
Pugh, Charles H., Gastonia; N. C. Med. Coll., 1910	1910	1913
Quickel, Thomas C., Gastonia; Tulane Univ., 1900	1899	1904
Reid, James W., Lowell; Jefferson, 1908	1908	1910
Rhyne, Robert Edgar, Gastonia; N. C. Med. Coll., 1907	1907	1908
Rudisill, J. D., Cherryville; Univ. of Md., 1922	1922	1923
Sanders, F. H., Cramerton; Emory Univ., 1915	1923	1923
Sloan, James M., Gastonia; Louisville Med. Coll., 1891	1891	1904

Name and Address	*Licensed*	*Joined State Society*
Swann, Jos. F., Gastonia; P. and S., Balt., 1896	1896	1905
Weathers, Bahnson, Gastonia; Washington Univ. Med. School, St. Louis, 1917	1921	1922
Wilkins, Samuel A., Dallas; Univ. of Ky., 1902	1903	1903

GATES COUNTY SOCIETY

President:		
Secretary:		
Blanchard, T. W., Hobbsville; Va. Med. Coll., 1911	1911	1919

GRANVILLE COUNTY SOCIETY

President: Jos. A. Morris, Oxford; Univ. of Nashville, 1890	1893	1899
Secretary: W. B. Bullock, Oxford; Bellevue, 1892	1892	1893
Bullock, J. H., Oxford; Med. Coll. of Va., 1915	1915	1922
Cannady, Sam H., Oxford; Univ. of Va., 1887	1889	1904
Daniel, N. C., Oxford; N. C. Med. Coll., 1895	1895	1902
Hardee, Parrott R., Stem; P. and S., Balt., 1885	1885	1906
Hays, B. K., U. S. Veterans Hosp., Fort Lyon, Colo.; Univ. Coll. of Med., 1894	1894	1897
Sikes, G. T., Creedmoor, (Hon.); Univ. of Md., 1883	1884	1884
Taylor, Wm. L., Oxford; Univ. of Va., Charlottesville, 1900	1900	1901
Thomas, Wm. N., Oxford; Va. Med. Coll., 1911	1911	1914
Thompson, Joseph W., Creedmoor; Univ. of Ky., 1904	1908	1912
Watkins, Geo. S., Oxford; Univ. Coll. of Med., 1900	1900	1908
Wilson, Archer A., Oxford; Va. Med. Coll., 1923	1923	1924

GREENE COUNTY SOCIETY

President:		
Secretary: W. E. Dawson, Hookerton; Jefferson, 1920	1920	1922
Edwards, G. C., Hookerton, (Hon.); Bellevue, 1883	1883	1883
Harper, J. H., Snow Hill; Jefferson, 1905	1906	1907
Marlowe, W. A., Walstonburg; Jefferson, 1919	1919	1921
Murphy, W. B., Snow Hill; Univ. Coll. of Med., 1903	1903	1905
Whittington, Wm. W., Snow Hill; Louisville Med. Coll., 1895	1895	1902

GUILFORD COUNTY SOCIETY

President: F. R. Taylor, High Point; Univ. of Pa., 1913	1913	1915
Secretary: D. W. Holt, Revolution Sta., Greensboro; Jeff. Med. Coll., 1918	1918	1920
Ashworth, W. C., Greensboro; P. and S., Balto., 1892	1892	1904
Austin, J. W., High Point; Jeff. Med. Coll., Phila., 1910	1910	1913
Aydlett, H. T., Greensboro; Univ. of Va., 1894	1895	1907
Banner, Chas. W., Greensboro; Univ. of Md., 1899	1899	1901
Battle, John T. J., Greensboro, (Hon.); P. and S., Balto., 1884	1884	1890
Beall, Wm. P., Greensboro, (Hon.); Jeff. Med. Coll., 1879	1879	1879
Berry, John, Greensboro; Jeff. Med. Coll., 1908	1908	1920
Best, Benj. W., Greensboro; Coll. of P. and S., Balto., 1884	1884	1920
Banner, A. C., Greensboro; Jeff. Med. Coll., 1920	1920	1922
Bonner, O. B., High Point; Univ. of Md., 1917	1920	1921

Name and Address	*Licensed*	*Joined State Society*
Bowman, H. P., Greensboro; Univ. of Tenn., 1894	1894	1905
Boyles, J. H., Greensboro; P. and S., Balto., 1903	1903	1904
Braddy, Wade Hampton, Greensboro; Univ. of N. C., 1909	1909	1913
Brockmann, Harry L., High Point, Univ. of Pa., 1917	1917	1921
Burrus, John T., High Point; N. C. Med. Coll., 1898	1898	1898
Cater, C. D., Greensboro; Emory Univ., 1920	1923	1924
Coe, Samuel S., High Point; Univ. Coll. of Med., Va., 1911	1912	1913
Cole, Walter F., Greensboro; Johns Hopkins, 1909	1909	1910
Crews, N. H., Greensboro; Jeff. Med. Coll., 1914	1914	1916
Dees, Ralph Erastus, Greensboro; Univ. of Md., 1906	1908	1909
Dees, Rigdon O., Greensboro; Univ. of Md., 1906	1906	1908
Dick, Julius Vance, Gibsonville; Univ. of N. C., 1907	1907	1908
Dodson, H. H., Greensboro, (Hon.); Med. Coll. of Va., 1882	1885	1887
Fields, B. T., Greensboro; Univ. Coll. of Med., Richmond, 1912	1912	1922
Flagge, Phillip W., Jamestown; Wash. Univ., St. Louis, 1902	1905	1919
Fortune, Alex. F., Greensboro; Univ. Coll. of Med., Va., 1900	1900	1904
Fox, M. F., Guilford College, (Hon.); P. and S., Balto., 1881	1885	1885
Gaw, Lois B., Greensboro; Woman's Med. Coll., Balt., 1916	.....	1924
Gilmer, Charles S., Greensboro, Rt. 6, (Hon.); Univ. of N Y., 1891	1891	1894
Glascock, J. H., Greensboro; Women's Med. Coll. of Balt., 1896	1896	1907
Gove, Anna M., Greensboro; Woman's Med. Coll., N. Y., 1892	1894	1896
Graham, J. A., Kansas City; Mo. Chicago Coll. of Med. and Surg., 1915	1921	1923
Grayson, C. S., High Point; Geo. Wash. Univ., 1906	1907	1908
Harden, R. N., Greensboro; Univ. of Pa., 1922	1922	1924
Harrison, Edmund, Greensboro; Univ. Coll. of Med., 1896	1900	1900
Harvey, W. W., Greensboro; Emory Univ., 1920	1922	1923
Herring, R. A., Greensboro; Tulane, 1905	1923	1924
Hiatt, H. B., High Point; Univ. of Md., 1907	1907	1910
Holden, E. C., High Point; Long Island C. Hosp., 1911	1920	1924
Holt, Wm. T., McLeansville; Univ. of Tenn., 1890	1895	1896
Hyatt, Fred C., Greensboro; Jeff. Med. Coll., Phila., 1907	1907	1912
Jackson, Walter Leo, High Point; N. C. Med. Coll., 1911	1911	1913
Jarboe, Parron, Greensboro; Georgetown Univ., 1905	1906	1907
Jones, Arthur O., Greensboro; Bellevue, 1890	1890	1904
Jones, Wm. M., Greensboro; Univ. of Md., 1903	1903	1903
Keiger, James A., Greensboro; Univ. of Va., 1916	1916	1919
Knight, Wm. P., Greensboro; Balto. Med. Coll., 1898	1898	1898
Lewis, S. V., Greensboro; Med. Coll. of Va., 1916	1916	1923
Locke, Eva M., Greensboro; Univ. of Mich., 1900	1921	1922
Long, John Wesley, Greensboro, (Hon.); Vanderbilt Univ., 1883; Univ. of Nashville, 1884	1884	1884
Lyon, B. R., Greensboro; Columbia Univ., N. Y., 1915	1920	1920
McAnally, Wm. J., High Point; Balto. Med. Coll., 1897	1896	1899
McCain, Wm. R., High Point; Univ. of Md., 1897	1898	1898
McManus, W. L., Greensboro; Atlanta School of Med., 1906	1912	1913
Mann, I. Thurman, High Point; Jeff. Med. Coll., 1912	1912	1915
Meadows, W. J., Greensboro; Med. Coll. of Ala., 1894	1899	1904
Michaux, Edward R., Greensboro; Univ. of N. Y., 1889	1889	1904

Name and Address	*Licensed*	*Joined State Society*
Miles, May S., Greensboro; Laura Mem. Women's Coll. of Med., Cincinatti, Ohio, 1898	1904	1905
Moore, Charles E., Greensboro; Jeff. Med. Coll., 1907	1907	1910
Moore, W. B., Brown's Summit; P. and S., Balto., 1893	1893	1904
Moseley, Charles W., Greensboro; Balto. Med. Coll., 1893	1893	1896
Ogburn, H. H., Greensboro; Johns Hopkins Univ., 1913	1913	1914
Pate, F. J., Greensboro; Univ. of Md., and P. and S., Balto., 1908	1908	1915
Reaves, W. P., Greensboro; Univ. of the South, 1903	1905	1907
Reitzel, Claude E., High Point; P. and S., Atlanta, 1902	1902	1902
Roberson, Charles, Greensboro; Long Island Coll. Hosp., 1897	1897	1901
Roberson, Geo. B., Greensboro; Med. Coll. of S. C., 1915	1915	1917
Schoonover, R. A., Greensboro; Baltimore Med. Coll., 1905	1912	1912
Sharpe, F. A., Greensboro; Univ. of Pa., 1916	1916	1920
Shohan, Joseph, Greensboro; Coll. P. and S., Baltimore, 1901	1914	1924
Shreve, J. R., Brown's Summit; N. C. Med. Coll., 1915	1915	1920
Shugart, F. C., High Point; Columbia Univ. Coll. P. and S., 1915	1915	1920
Simmons, L. L., Greensboro; Univ. Tenn., 1893; Vanderbilt Univ., 1899	1918	1919
Smith, Alick T., Greensboro; Med. Coll. of Va., 1908	1910	1913
Smith, Owen, High Point; Jeff. Med. Coll. of Phila., 1904	1905	1917
Stanton, D. A., High Point, (Hon.); Vanderbilt Univ., 1887	1887	1891
Stanton, T. M., High Point; Med. Coll. of Va., 1916	1916	1917
Starr, H. F., Greensboro; Jeff. Med. Coll., 1916	1916	1917
Tankersley, J. W., Greensboro; Jeff. Med. Coll., 1906	1906	1907
Taylor, S. R., Greensboro; Univ. of Pa., 1921	1921	1924
Thomas, J. G., Greensboro; Med. Coll. of Va., 1915	1915	1920
Thompson, C. D., High Point; Univ. of Tenn., 1901	1901	1904
Turner, J. P., Greensboro; Univ. of Md., 1896	1897	1904
Walker, J. B., Gibsonville; Med. Coll. of Va., 1914	1914	1916
Whitaker, A. C., Julian; Univ. of Tenn., 1903	1903	1908
Williams, B. B., Greensboro; Univ. of Md., 1883	1887	1893
Williams, John D., Guilford Station; Vanderbilt Univ., 1898	1898	1898
Wilson, Albert R., Greensboro, (Hon.); Jeff. Med. Coll., Phila., 1882	1882	1882
Wolfe, H. C., Greensboro; Med. Coll. of Va., 1917	1917	1920
Wolff, D. R., Greensboro; Jeff. Med. Coll., 1918	1918	1920
Woodruff, Fred G., High Point; Med. Coll. of Va., 1917	1918	1919

HALIFAX COUNTY SOCIETY

President: T. W. M. Long, Roanoke Rapids, Univ. Coll. of Med., Va., 1908	1909	1900
Secretary: E. W. Larkin, Weldon; N. C. Med. Coll., 1917	1920	1922
Beckwith, R. P., Rosemary; Univ. of Pa., 1911	1913	1916
Fleming, W. L., Enfield; Univ. of N. C., 1910	1910	1916
Jarman, F. G., Roanoke Rapids; Univ. Coll. of Med., Va., 1911	1914	1916
Lassiter, H. G., Weldon; Jeff. Med. Coll., 1918	1918	1920
Leggett, Kenelm, Hobgood, (Hon.); Ky. School of Med., 1884	1885	1885
Leggett, V. W., Hobgood; Univ. of Louisville, 1914	1916	1920
Martin, J. W., Roanoke Rapids; Med. Coll. of Va., 1916	1919	1920

Name and Address	*Licensed*	*Joined State Society*
Nicholson, B. M., Enfield; Va. Univ. Coll. of Med., 1910	1910	1913
Orr, C. V., State Farm, Halifax; Atlanta School of Med., 1909	1909	1909
Palmer, Horace, Hollister; Atlanta School of Med., 1912	1912	1920
Patchin, D. F., Rosemary; Univ. and Bellevue Hosp., Med. Coll., N. Y., 1913	1916	1917
Picot, L. J., Littleton, (Hon.); Jeff. Med. Coll., 1873	1875	1875
Pierce, S. B., Weldon; Bellevue Hosp., 1897	1897	1906
Putney, W. R., Littleton; Univ. Coll. of Med., Richmond, 1912	1919	1920
Smith, O. F., Scotland Neck; Univ. Coll. of Med., Va., 1899	1899	1904
Suiter, W. G., Weldon; Med. Coll. of Va., 1917	1917	1920
Thigpen, H. G., Scotland Neck; Jeff. Med. Coll., 1917	1917	1920
Whitaker, F. C., Enfield; Maryland Med. Coll., 1911	1911	1919
Zollicoffer, D. B., Weldon; P. and S., Baltimore, 1881	1886	1904

HARNETT COUNTY SOCIETY

President:		
Secretary: H. C. Turlington, Dunn; Univ. Coll. of Med., Va., 1913	1913	1914
Barefoot, M. L., R. F. D. 6, Dunn; Univ. of Md., 1911	1911	1912
Buie, Roderick Mark, Duke; Jeff. Med. Coll. of Phila., 1914	1914	1916
Coltrane, Wallace E., Dunn; Med. Coll. of Va., 1912	1913	1917
Halford, Jos. W., Lillington; Geo. Washington Univ., 1904	1905	1905
Hicks, Isham Faison, Dunn; N. C. Med. Coll., 1902	1902	1904
Highsmith, Charles, Dunn; Balt. Med. Coll., 1898	1898	1898
Holt, Wm. P., Duke; Jeff. Med. Coll., Phila., 1895	1895	1901
McKay, Joseph F., Buies Creek; S. C. Med. Coll., 1884	1885	1904
McLean, John W., Godwin; N. C. Med. Coll., 1902	1902	1906
Melvin, Wayman C., Linden; Univ. Coll. of Med., Richmond, 1900	1900	1905
Phillips, J. W., Lillington; Geo. Washington Univ., 1921	1922	1923
Roberts, H. C., Coats; Tulane Univ., 1912	1912	1913
Sexton, C. Hector, Dunn; Univ. of Md., 1890	1890	1904
Warren, R. L., Dunn; Tulane Univ., 1911	1911	1912

HAYWOOD COUNTY SOCIETY

President:		
Secretary:		
Abel, J. F., Waynesville; Univ. of Balt., 1892	1893	1899
Allen, Rufus L., Waynesville; Univ. of Md., 1885	1885	1889
Davis, F. M., Canton; Vanderbilt Univ., 1894	1894	1904
Johnson, W. C., Canton; Tulane Univ. of La., 1912	1912	1917
McCracken, J. R., Waynesville; N. C. Med. Coll., 1902	1902	1903
Montgomery, K. E., Waynesville; Univ. of Louisville, Ky., 1917	1920	1920
Reynolds, T. F., Canton; N. C. Med. Coll., 1904	1904	1920
Russell, Jesse M., Canton; Univ. of Nashville, 1911	1911	1912
Stringfellow, Jas. L., Sunburst; Univ. of Va., 1915	1921	1922
Stringfield, Samuel L., Waynesville; Jeff. Med. Coll., Phila., 1905	1905	1907
Stringfield, Thomas, Waynesville; Vanderbilt Univ., 1898	1898	1899
Way, J. Howell, Waynesville, (Hon.); Vanderbilt Univ., 1886	1885	1887
Wilson, J. E., R. F. D., Canton; Louisville Med. Coll., 1876	1885	1903

HENDERSON-POLK COUNTIES SOCIETY

Name and Address	*Licensed*	*Joined State Society*
President: J. S. Brown, Hendersonville, (Hon.); Northwestern Univ., 1893	1894	1895
Secretary: R. C. Sample, Hendersonville; Univ. of Pa., 1915	1915	1919
Brackett, W. E., Hendersonville; Jeff. Med. Coll., 1915	.....	1924
Cliff, B. F., Hendersonville; Geo. Washington Univ., 1908	1909	1915
Dixon, Guy E., Hendersonville; P. and S., St. Louis, 1903	1903	1903
Drafts, Andrew B., Hendersonville; Univ. of Va., 1896	1899	1903
Edgerton, Jas. L., Hendersonville, (Hon.); Univ. of Md., 1877	1885	1890
Grady, Wm. Earle, Tryon; Univ. of Md. and P. and S., Balt., 1894	1895	1899
Howe, Wm. B. White, Jr., Hendersonville; Med. Coll. of S. C., 1906	1907	1908
Greenwood, S. E., Fletcher; Lincoln Mem. Univ., 1902	1903	1904
Kirk, W. R., Hendersonville; Hosp. Coll. of Med., Louisville, 1891	1901	1903
Mallett, E. P., Hendersonville; L. I. Coll. Hosp., Brooklyn, 1889	1914	1914
Salley, E. McQueen, Saluda; Univ. of Md., 1905	1905	1908

HERTFORD COUNTY SOCIETY

President: R. H. Gary, Murfreesboro; Coll. of Phy. and Surg., 1881	1885	1904
Secretary: W. B. Pollard, Winton; Univ. of Pa., 1899	1903	1905
Burbage, Thomas I., Como; Memphis Hosp. Med. Coll., 1883	1885	1890
Futrell, L. M., Murfreesboro; Va. Med. Coll., 1914	1914	1918
Greene, Arthur W., Ahoskie; Univ. Coll. of Med., 1904	1904	1905
Harrell, Geo. N., Murfreesboro; Univ. Coll. of Med., Richmond, 1907	1907	1909
Mitchell, Jesse H., Ahoskie; Coll. of P. and S., Balt., 1879	1885	1904
Mitchell, Paul H., Ahoskie; Univ. Coll. of Med., Richmond, 1907	1907	1908
Powell, Jesse A., Harrellsville; Coll. of Phys. and Surg., Balt., 1907	1908	1909
Walker, L. K., Ahoskie; Univ. of Md., 1911	1911	1917

HOKE COUNTY SOCIETY

President: P. P. McCain, Sanatorium; Univ. of Md. and Coll. P. and S., 1911	1914	1917
Secretary: L. B. McBrayer, Southern Pines; Louisville Med. Coll., 1889	1891	1899
Bittinger, S. M., Sanatorium; Geo. Washington Univ., 1918	1924	1924
Brown, G. W., Raeford; Ky. School Med., Louisville, 1898	1900	1900
Geddie, K. B., Raeford; Jeff. Med. Coll., 1921	1921	1923
Kinlaw, Wm. Bernard, Sanatorium; Univ. of Pa., 1920	1920	1923
Lee, S. E., Sanatorium; Univ. of Md., 1911	1924	1924
Wilkins, R. B., Raeford; N. C. Med. Coll., 1913	1913	1915
Williams, J. H., Sanatorium; Jeff. Med. Coll., 1920	1920	1922

HYDE COUNTY SOCIETY

President:	.....	.....
Secretary:	.....	.....
Harris, Arthur Graham, Fairfield; Univ. of the South, 1905	1907	1908
Mann, Thos. A., Jacksonville; Ill., Univ. of Md., 1903	1903	1924

IREDELL-ALEXANDER COUNTIES SOCIETY

Name and Address	*Licensed*	*Joined State Society*
President: L. O. Gibson, Statesville; N. C. Med. Coll., 1913	1913	1915
Secretary: J. E. McLaughlin, Statesville; Univ. of Md., 1886	1886	1900
Adams, M. R., Statesville, (Hon.); Univ. of Md., 1878	1884	1884
Anderson, Thos. Eli, Statesville, (Hon.); Jeff. Med. Coll., Phila., 1878	1879	1879
Bell, A. E., Mooresville; Univ. of Md. and Coll. of P. and S., 1897	1897	1904
Bingham, George P., Mooresville; Hosp. Med. Coll., Eclectic, Atlanta, 1911		1924
Crouch, T. D., Stony Point; N. C. Med. Coll., 1909 and Univ. of Md., 1910	1909	1915
Davis, Jas. W., Statesville; Univ. of Pa., 1913	1913	1915
Easley, P. S., Statesville; N. C. Med. Coll., Charlotte, 1907; Jeff. Med. Coll., Phila., 1908	1907	1913
Gambrell, Grover C., Mooresville; Univ. of Ga., 1912	1923	1924
Gilmore, W. D., Box 1194, Indianapolis, Ind.; Univ. of N. C., 1903	1903	1904
Goode, T. V., Statesville; Univ. Coll. of Med., Va., 1912	1912	1916
Long, H. F., Statesville, (Hon.); Univ. of Md., 1892	1892	1893
McElwee, Ross S., Statesville; Univ. of Md., 1909	1909	1910
Poston, J. Lewis, Statesville; Jeff. Med. Coll., 1922	1923	1924
Sharpe, Frank L., Statesville; Univ. of N. C., 1904	1904	1905
Sherrill, C. L., Statesville; N. C. Med. Coll., 1914	1914	1915
Tally, J. S., Troutman; Univ. of N. C., 1909	1910	1917
Tatum, Roy C., Statesville; Jeff. Med., 1919	1919	1920
Wilson, W. E., Mooresville; Louisville Med. Coll., 1886	1886	1920

JACKSON COUNTY SOCIETY

President: Chas. Z. Candler, Sylva; P. and S., Atlanta, 1901	1901	1904
Secretary: D. D. Hooper, Sylva; Univ. Coll. of Med., Va., 1905	1905	1905
Bryson, E. J., Cullowhee; Bennett Med. Coll., Chicago, 1913	1914	1915
Nichols, Alvin A., Sylva; Univ. of Nashville, Med. Dept., 1898	1904	1904
Nichols, Asbury S., Sylva; Lincoln Mem. Univ., Knoxville, 1905	1907	1913
Peek, David E., Cullowhee; Emory Univ., 1918	1923	1924
Van Epp, Owen B., East Laport; Cleveland-Pulte Med. Coll., 1900	1923	1923
Wilkes, Grover C., Sylva; N. C. Med. Coll., Charlotte, 1916	1916	1920

JOHNSTON COUNTY SOCIETY

President: Battle A. Hocutt, Clayton; Univ. of N. C., 1906	1906	1908
Secretary: J. Herbert Fitzgerald, Smithfield; Jeff. Med., 1920	1920	1922
Brooks, H. E. Clayton; Med. Coll. of Va., 1917	1917	1923
Coleman, G. S., Kenly; Med. Coll. of Va., 1907	1907	1909
Grady, Jas. C., Kenly; Balt. Univ. School of Med., 1887	1887	1890
Griffin, J. A., Clayton, (Hon.); P. and S., Baltimore, 1881		1890
Hooks, Thel., Smithfield; Med. Coll. of Va., 1901	1901	1903
Lee, S. J. P., Benson; Maryland Med. Coll., 1904	1904	1922
McLemore, George A., R. F. D., Clayton; Univ. of N. C., 1906	1906	1908
Martin, J. F., Benson; N. C. Med. Coll., 1905	1905	1918
Mayerberg, L. W., Selma; Jeff. Med. Coll., 1907	1907	1909

Name and Address	*Licensed*	*Joined State Society*
Noble, R. J., Selma, (Hon.); Ky. Med. School, 1875	1879	1878
Oliver, A. S., Benson; Jeff. Med. Coll., 1914	1914	1919
Person, J. B., Selma; Med. Coll. of Va., 1897	1897	1900
Rose, A. H., Smithfield; Jeff. Med. Coll., 1906	1906	1907
Stanley, John H., Four Oaks; Univ. of N. C., 1904	1904	1906
Stevens, R. S., Princeton; Univ. of N. C., 1905	1905	1907
Surles, J. B., Four Oaks; Jeff. Med. Coll., 1909	1909	1919
Tyner, Carl V., Smithfield; Univ. and Bellevue Hosp. Med. Coll., 1916	1916	1919
Utley, H. H., Benson; Balt. Med. Coll., 1906	1906	1901
Vick, Geo. D., Selma; Jeff. Med. Coll., 1906	1901	1907
Wharton, L. D., Smithfield, (Hon.); Tulane Univ., 1893	1893	1894
Wilson, W. G., Princeton; Jeff. Med. Coll., 1921	1921	1924
Woodard, G. B., Kenly; Med. Coll., of Va., 1915	1915	1916
Young, J. J., Clayton; P. and S., Balt., 1897	1896	1904

JONES COUNTY SOCIETY

President:		
Secretary:		
Page, B. W., Maysville; Tulane Univ., 1909	1909	1919

LEE COUNTY SOCIETY

President: I. H. Lutterloh, Sr., Sanford; Vanderbilt Univ., 1890		1922
Secretary: Lynn McIvor, Sanford; Kentucky Univ., 1901	1902	1902
Foster, J. F., Sanford; N. C. Med. Coll., 1916	1916	1919
Lutterloh, I. Hayden, Jr., Sanford; Jefferson Med. Coll., 1921	1921	1922
Mathews, M. L., Sanford; Univ. of N. C., 1903	1903	1904
Monroe, J. P., Sanford; P. and S., Balt., 1901	1901	1905
Monroe, W. A., Sanford, (Hon.); Univ. of Md., 1886	1886	1890
Scott, Charles L., Sanford; Univ. of Md., 1897	1899	1916
Snipes, E. P., Jonesboro, (Hon.); Vanderbilt Univ., 1890	1890	1890
Sowers, Roy G., Jonesboro; Univ. of Md., 1923	1923	1924
Watson, Leon, Broadway; N. C. Med. Coll., 1900	1900	1904

LENOIR COUNTY SOCIETY

President: Albert DeK. Parrott, Kinston; Univ. Coll. of Med., Va., 1906	1906	1908
Secretary: Paul F. Whitaker, Kinston; Med. Coll. of Va., 1922	1922	1924
Adams, L. C., La Grange; N. C. Med. Coll., 1903	1903	1921
Hardy, Ira M., Kinston; Med. Coll. of Va., 1901	1902	1902
Hargrove, W. F., Kinston; Univ. of Md., 1901	1901	1900
Hyatt, A. L., Kinston; Univ. of Md., 1910	1910	1921
Johnson, H. Pink Hill		1924
McGeachy, R. S., Kinston; Bellevue Hosp., 1894	1894	1895
McNairy, C. Banks, Kinston; P. and S., Balt., 1893	1893	1905
Mangum, C. P., Kinston; Jeff. Med. Coll., 1918	1918	1920
Parrott, James M., Kinston; Tulane Univ., 1895	1895	1896
Parrott, M. C., Kinston; Tulane Univ., 1917	1917	1919

Name and Address	*Licensed*	*Joined State Society*
Parrott, Wm. T., Kinston; Tulane Univ., 1899	1899	1901
Peery, Vance P., Kinston; Med. Coll. of Va., 1916	1917	1917
Tull, Henry, Kinston, (Hon.); Univ. of Pa., 1876	1876	1876
West, C. F., Kinston; Univ. of Pa., 1917	1917	1920
Weyher, V. E., Kinston; Univ. Vienna, Austria, 1869	.....	1919
Whitaker, Frederick A., Kinston; Univ. of Pa., 1875	1871	1884
Whitaker, Frederick S., Kinston; Balt. Med. Coll., 1913	1913	1914
Wooten, Floyd P., Kinston; Jeff. Med., 1920	1920	1923

LINCOLN COUNTY SOCIETY

President: J. F. Gamble, Lincolnton; Univ. of Tenn., 1903	1915	1919
Secretary: G. B Crowell, Lincolnton; Univ. of Pa., 1922	1922	1923
Abernathy, H. N., Denver; Louisville Med. Coll., 1894	1894	1899
Bradford, B. M., Lincolnton; N. C. Med. Coll., 1913	1915	1923
Crowell, L. A., Lincolnton; Balt., Med. Coll., 1892	1892	1898
Edwards, F. D., Belwood; Emory Univ., 1914	1916	1919
Elliott, W. F., Lincolnton; Pa. Medico-Chir. Coll., 1916	1916	1917
Fox, Albert, Lincolnton; Univ. of N. Y., 1873	1924	1924
Gamble, J. R., Lincolnton; Univ. of Tennessee, 1911	1911	1912
Hoover, C. H., Denver; Chattanooga Med. Coll., 1900; Balt. Med. Coll., 1903	1903	1903
Jacocks, W. P., New York City; Univ. of Pa., 1911	1911	1913
Killian, R. B., Lincolnton; Louisville Med. Coll., 1885	1885	1904
Kiser, W. C., Reepsville; Southern Med. Coll., of Ga., 1889	1889	1904
Lee, R. E., Lincolnton; Univ. of Md., 1896	1896	1918
Saine, J. W., Lincolnton; Louisville Med. Coll., 1891	1891	1904
Shellum, O. W., Lowesville; N. C. Med. Coll., 1909	1909	1913

McDOWELL COUNTY SOCIETY

President: John B. Johnson, Old Fort; Univ. of Louisville, 1905	1914	1914
Secretary: R. B. Butt, Marion; Emory Univ., Atlanta, 1920	1920	1921
Ashworth, B. L., Marion; P. and S., Balt., 1892	1893	1900
Jonas, John F., Marion; Balt. Med. Coll., 1903	1903	1903
Justice, Gaston B., Marion; P. and S., Atlanta, 1907	1907	1907
Kirby, Guy S., Marion; Univ. Coll. of Med., Va., 1897	1896	1903
McIntosh, D. M., Old Fort; Med. Coll. of Va., 1904	1907	1909

MACON-CLAY COUNTIES SOCIETY

President: S. H. Lyle, Franklin; Univ. of Nashville, 1883	1881	1882
Secretary: W. A. Rogers, Franklin; Univ. of Nashville, 1898	1898	1898
Angel, F., Franklin; Jeff. Med. Coll., 1918	1923	1924
Fouts, J. H., Franklin; Vanderbilt Univ., 1895	1895	1918
Killian, P. B., Hayesville; Atlanta Coll. of P. and S., 1900	1909	1909
Lapham, Mary E., Highlands; Woman's Med. Coll. of Pa., 1900	1906	1906
Siler, Fred L., Franklin; Univ. of Nashville, 1897	1895	1903

MADISON COUNTY SOCIETY

President: Willard F. Robinson, Mars Hill; Vanderbilt Univ., 1896	1903	1904
Secretary: Frank Roberts, Marshall; Baltimore Univ., 1895	1892	1902

Name and Address	*Licensed*	*Joined State Society*
Andrews, John H., White Rock; Harvard Med. Coll., 1902	1922	1923
Baird, John W., Mars Hill; Lincoln Mem. Univ., Knoxville, 1901	1908	1909
Burnett, Isaac E., Mars Hill; Lincoln Mem. Univ., Knoxville, 1901	1905	1904
English, I. L., Faust	1887	1904
Moore, Jos. N., Marshall; Univ. of N. C., 1905	1905	1909
Packard, G. H., Meredith, N. H.; Rt. 1, P. and S., Balt., 1898	1914	1915
Peck, Edward J., Hot Springs; Vanderbilt Univ., 1879; Univ. of Nashville, 1880		1903
Sams, W. A., Marshall; Lincoln Mem., 1911	1919	1920
Tilson, Jacob Carson, Marshall; Lincoln Mem. Univ., 1892	1885	1904

MARTIN COUNTY SOCIETY

President: J. H. Saunders, Williamston; Univ. Coll. of Med., Va., 1905	1905	1909
Secretary: Wm. E. Warren, Williamston; Nongrad. Univ., N. Y.	1893	1894
Knight, J. B. H., Williamston, (Hon.); P. and S., Balt., 1885	1885	1890
Long, Benj. L., Hamilton, (Hon.); Univ. of Md., 1881	1883	1885
Long, Edgar M., Hamilton; Univ. of Md., 1909	1909	1910
Nelson, Robert J., Robersonville, (Hon.); Louisville Med. Coll., 1890	1890	1893
Rhodes, James S., Williamston; Med. Coll. of Va., 1906	1906	1907
Smithwick, James E., Jamesville; Univ. Coll. of Med., 1897	1897	1904
Ward, Jesse E., Robersonville; Univ. of Md., 1904	1904	1905
York, Hugh B., Williamston; P. and S., Balt., 1906	1906	1907

MECKLENBURG COUNTY SOCIETY

President: John Q. Myers, Charlotte; N. C. Med. Coll., 1904	1904	1904
Secretary: John P. Kennedy, Charlotte; Jeff. Med. Coll., 1915	1915	1920
Alexander, Annie L., Charlotte, (Hon.); Women's Med. Coll., Pa., 1884	1885	1885
Alexander, James R., Charlotte; Univ. of Md., 1894	1894	1899
Alexander, M. Janet, Montgomery, India; Women's Med. Coll., Pa., 1917	1917	1918
Allan, William, Charlotte; P. and S., Balt., 1906	1906	1914
Ashe, J. R., Charlotte; Columbia Univ., 1911	1915	1915
Austin, D. R., Charlotte; Jeff. Med. Coll., 1917	1917	1918
Austin, Frederick De Costa, Charlotte; N. C. Med. Coll., 1907	1907	1908
Austin, J. A., Charlotte; Jeff. Med. Coll., 1887	1887	1904
Barrett, H. P., Charlotte; Univ. of Louisville, 1908	1917	1919
Barron, A. A., Charlotte; Vanderbilt Univ., 1909	1910	1910
Battle, S. W., Charlotte, (Hon.); Bellevue Med. Coll., N. Y., 1875	1885	1887
Blalock, B. K., Charlotte; Univ. of Md., 1913	1913	1917
Bost, T. C., Charlotte; Geo. Washington Univ., 1915	1920	1921
Boyette, E. C., Charlotte; Balt. Med. Coll., 1893	1898	1906
Brenizer, A. G., Jr., Charlotte; Johns Hopkins, 1908, and Univ. of Heidelberg	1911	1911
Caldwell, J. H., Charlotte; N. C. Med. Coll., 1914	1914	1914
Craven, Thomas, Huntersville; Jeff. Med. Coll., 1917	1917	1918

Name and Address	*Licensed*	*Joined State Society*
Craven, W. W., Huntersville; Univ. of Md., 1903	1904	1904
Crowell, Andrew J., Charlotte, (Hon.); Univ. of Md., 1893	1892	1894
Davidson, John E. S., Charlotte; Univ. of Md., 1894	1898	1898
De Armon, J. McC., Charlotte, (Hon.); Univ. of Md., 1886	1886	1887
Elliott, J. A., Charlotte; Univ. of Mich., 1914	1919	1920
Faison, I. W., Charlotte, (Hon.); Bellevue Med. Coll., 1878	1878	1878
Faison, Yates W., Charlotte; Harvard Univ., 1910	1910	1912
Ferguson, R. T., Charlotte; Univ. Coll. of Med., 1906	1909	1909
Gage, L. G., Charlotte; Univ. of Va., 1915	1921	1922
Gallant, Robert M., Charlotte; N. C. Med. Coll., 1915	1915	1916
Gaul, John Stuart, Charlotte; Medico-Chir., Phila., 1913	1922	1923
Gibbon, James, Charlotte; Jeff. Med. Coll., 1918	1920	1921
Gibbon, Robert L., Charlotte, (Hon.); Jeff. Med. Coll., 1888	1887	1888
Graham, Wm. A., Charlotte, (Hon.); Columbia Univ., P. and S., N. Y., 1888-1889	1890	1890
Hand, Edgar H., Pineville; N. C. Med. Coll., Charlotte, 1907	1907	1913
Henderson, S. McD., Charlotte; Univ. of Md., 1894	1894	1904
Herring, W. C., Parsons, Kans.; N. Y. Univ. Med. Coll., 1890	.....	1918
Hipp, Edw. R., Charlotte; Univ. of Va., 1918	1920	1921
Hovis, L. W., Charlotte; N. C. Med. Coll., 1904	1904	1906
Hunter, L. W., Charlotte, Rt. 1, (Hon.); Bellevue Hosp., 1875	1880	1880
Hunter, M. C., Huntersville; Coll. of P. and S., Balt., 1882	1882	1882
Hunter, Myers, Charlotte; Georgetown Univ., 1905	1906	1908
Irwin, Hammer C., Pocatella, Idaho; Univ. of Md., 1905	1914	1916
Irwin, J. R., Charlotte, (Hon.); Univ. of Md., 1877	1882	1882
Johnston, J. G., Charlotte; Med. Dept., Vanderbilt Univ., 1899	1913	1916
Justice, Z. K., Davidson; N. C. Med. Coll., 1903	1917	1919
King, Parks M., Charlotte; Bellevue Med. Coll., 1902	1902	1904
Lafferty, Robert H., Charlotte; N. C. Med. Coll., 1906	1906	1908
Leinbach, Robert F., Charlotte; Univ. of Pa., 1907	1907	1910
Linney, R. Z., Charlotte; Georgetown Univ., 1901	1914	1918
MacConnell, John W., Davidson; Univ. of Md., 1907	1908	1909
McKay, Hamilton W., Charlotte; N. C. Med. Coll., 1909; Jeff. Med. Coll., 1910	1911	1913
McLaughlin, Calvin S., Charlotte; Univ. of Md., 1896	1896	1903
McManus, H. F., Mathews; Atlanta School of Med., 1913	1922	1923
McPhail, L. D., Charlotte; Univ. of Md., 1900	1900	1902
Martin, Wm. F., Charlotte; Univ. of Md., 1920	1920	1923
Martin, W. J., Davidson; Univ. of Va., 1890	1891	1919
Matheson, James P., Charlotte; Univ. of Md., 1905	1902	1907
Mathews, Vann M., Charlotte; Univ. of Pa., 1918	1918	1921
Misenheimer, Charles A., Charlotte, (Hon.); N. Y. Univ. Med. Coll., 1882	1882	1882
Montgomery, John C., Charlotte, (Hon.); N. Y. Univ. Med. Coll., 1891	1891	1895
Moore, Alexander W., Charlotte; Univ. Va., 1901; Univ. and Bellevue Hosp. Med. Coll., 1902	1912	1913
Moore, Baxter S., Charlotte; Univ. of Va., 1902	1905	1905
Moore, Oren, Charlotte; N. C. Med. Coll., 1911	1911	1912

Name and Address	*Licensed*	*Joined State Society*
Munroe, H. Stokes, Charlotte; N. C. Med. Coll., 1902; Jeff. Med., 1903	1902	1904
Munroe, J. P., Charlotte, (Hon.); Univ. of Va., 1885	1886	1890
Myers, Alonzo, Charlotte; N. C. Med. Coll., 1911; Bellevue Hosp. Med. Coll., 1916	1911	1920
Nalle, B. C., Charlotte; Univ. of Va., 1903	1905	1905
Nance, C. L. Charlotte; N. C. Med., 1919	1921	1922
Newell, Leone B., Charlotte; Univ. of N. C., 1905	1905	1908
Nisbet, D. Heath, Charlotte; Harvard Med. Dept., 1917	1917	1920
Nisbet, Walter O., Charlotte; Med. Coll. of S. C., 1889	1899	1889
Northington, J. M., Charlotte; Med. Coll. of Va., 1905	1909	1909
Parry, Leo D., Charlotte; Md. Med. Coll., 1912; Univ. Pa., 1922	1924	1924
Parsons, W. H., Charlotte; N. C. Med. Coll., 1916	1916	1919
Patterson, Reid, Charlotte; N. C. Med. Coll., 1912	1912	1913
Peeler, Clarence N., Charlotte; N. C. Med. Coll., 1906	1906	1908
Petrie, Robert Wm., Charlotte; Univ. of Md., 1903	1903	1903
Petteway, George H., Charlotte; N. C. Med. Coll., 1913	1913	1914
Pharr, Wm. W., Charlotte, (Hon.); P. and S., Balt., 1882	1885	1887
Phillips, C. C., Charlotte; N. C. Med. Coll., Charlotte, 1912	1912	1917
Pressly, Geo. W., Charlotte; Jeff. Med. Coll., 1895	1895	1896
Query, Richard Z., R. F. D., Charlotte; Univ. Coll. of Med., Richmond, 1907	1907	1908
Ranson, J. Lester, Charlotte; N. C. Med. Coll., 1911	1911	1912
Ray, F. L., Charlotte; Med. Coll. of Va., 1919	1919	1922
Ross, Otho B., Charlotte; Univ. of Pa., 1909	1909	1912
Scruggs, W. Marvin, Charlotte; Univ. of Pa., 1914	1914	1920
Shaw, Lillian E., Charlotte; Women's Med. Coll., 1922	1923	1923
Shirley, H. C., Charlotte; Johns Hopkins, 1918	1921	1922
Shull, J. Rush, Charlotte; Univ. of Pa., 1910	1910	1913
Simmons, John O., Charlotte; Chattanooga Med. Coll., 1904	1906	1908
Sloan, H. L., Charlotte; Univ. of Pa., 1911	1913	1914
Sparrow, Thos. De Lamar, Charlotte; Univ. of Pa., 1920	1920	1923
Squires, Claude B., Charlotte; Jeff. Med. Coll., 1919	1919	1921
Strong, Charles M., Charlotte; Univ. of Md., 1888	1889	1898
Strong, Wm. M., Charlotte; N. C. Med. Coll., Charlotte, 1904	1904	1905
Taylor, H. C., Charlotte, Chadwick Sta.; Tenn. Med., 1886	1910	1915
Thompson, S. R., Charlotte; N. C. Med. Coll., 1914	1914	1915
Todd, L. C., Charlotte; Univ. of Mich., 1918	1920	1920
Townsend, M. L., Charlotte; Indiana Med. Coll., 1906	1912	1919
Tucker, John H., Charlotte; Univ. of Va., 1899	1901	1911
Tydeman, F. W. L., Wood River, Ill.; N. C. Med. Coll., Charlotte, 1912	1912	1918
Wakefield, Harry A., Charlotte; N. C. Med. Coll., 1908	1908	1911
Walker, L. D., Charlotte; Med. Coll. of Va., 1908	1917	1919
Whisnant, Albert M., Charlotte; P. and S., Balt., 1893	1893	1899
Whitley, Ayer, Matthews; Balt Med. Coll., 1908	1908	1919
Wingate, G. C., Charlotte; N. C. Med. Coll., 1914	1915	1919
Wishart, Wm. E., Charlotte; N. C. Med. Coll., 1911	1911	1911

Name and Address	*Licensed*	*Joined State Society*
Witherspoon, B. J., Charlotte; S. C. Med. Coll., 1894	1900	1911
Woodruff, Julian S., Charlotte; Univ. of Md., 1920	1920	1923

MITCHELL-WATAUGA COUNTIES SOCIETY

President:	.....	.....
Secretary:	.....	.....
Bingham, G. D., Sugar Grove; Univ. Tenn., 1905; Lincoln Mem. Univ., 1908	1909	1920
Gouge, A. E., Bakersville; N. C. Med. Coll., 1917	1917	1920
Hardin, R. H., Boone; N. C. Med. Coll., 1914	1914	1919
Jones, J. Walter, Boone; Chattanooga Med. Coll., 1900	1902	1904
Perry, H. B., Valle Crucis; N. C. Med. Coll., 1905	1905	1922
Peterson, C. A., Spruce Pine; N. C. Med. Coll., 1907	1907	1908
Peterson, J. M., Spruce Pine; Lincoln Mem. Univ. of Tenn., 1902	1918	1921

MONTGOMERY COUNTY SOCIETY

President: A. F. Thompson, Troy; Med. Coll. of Indiana, 1895	1895	1904
Secretary: Charles Daligny, Troy, (Hon.); Univ. of Paris, 1878	1885	1891
Boyles, A. C., Troy; Univ. of Md., 1887; Balt. Univ. School Med., 1898	1887	1912
Dameron, Ernest L., Star; N. C. Med. Coll., 1911	1911	1913
Ingram, Charles B., Mt. Gilead, (Hon.); Jeff. Med. Coll., 1886	1886	1902
McMillan, J. M., Candor; P. and S., Atlanta, 1909	1909	1911
Nicholson, N. G., Jr., Mt. Gilead; N. C. Med. Coll., 1917	1917	1920
Rankin, Pressly R., Mt. Gilead; N. C. Med. Coll., 1910	1910	1912
Shamburger, John B., Star, (Hon.); Univ. of Md., 1890	1890	1892

MOORE COUNTY SOCIETY

President: A. McN. Blue, Carthage; Tulane Univ., 1915	1916	1917
Secretary: J. W. Dickie, Southern Pines; Jeff. Med. Coll., 1918	1920	1921
Achorn, John W., Pine Bluff; Bowdoin Med. School, 1887; Bellevue Med. Coll., 1889	1899	1889
Blair, A. McNiel, Southern Pines; Niagara Univ., 1897	1904	1906
Bowman, H. E., Aberdeen; N. C. Med. Coll., 1904	1904	1919
Davis, J. Franklin, High Falls; Med. Coll. of Va., 1912	1912	1914
Grier, Charles T., Carthage; N. C. Med. Coll., 1910	1912	1913
Harper, W. T., Southern Pines; Jeff. Med. Coll., 1920	1920	1923
Holt, Erastus E., Southern Pines; Bowdoin Med. School, 1874; Columbia Univ. Coll. of P. and S., 1875	1921	1922
McDonald, Augustus A., Jackson Springs; N. C. Med. Coll., 1905	1907	1912
McDuffie, W. N., Hemp; Emory Univ. Sch. of Med., Atlanta, 1916	1920	1921
McLeod, A. H., Aberdeen; Balt. Med. Coll., 1896	1896	1904
McLeod, Gilbert M., Carthage; Univ. of Md., 1882	1885	1904
Marr, M. W., Pinehurst; Tufts Coll. Med. School, Boston, 1907	1909	1915
Milliken, J. S., Southern Pines; Jeff. Med. Coll., 1915	1915	1916
Mudgett, W. C., Southern Pines; Maryland Med. Coll., 1903	1908	1911
O'Briant, A. L., Cameron; Jeff. Med., 1920	1920	1922

Name and Address	*Licensed*	*Joined State Society*
Rosser, R. G., Vass; N. C. Med. Coll., Charlotte, 1909	1909	1917
Shields, Henry B., Carthage; Emory Univ. School of Med., 1882	1887	1904
Street, M. E., Glendon; P. and S., Balt., 1893	1893	1902

NASH COUNTY SOCIETY

President: R. H. Noell, Rocky Mount; Univ. of Md., 1916	1916	1920
Secretary: Adam T. Thorp, Rocky Mount; Univ. of Pa., 1921	1921	1923
Battle, Ivan Proctor, Rocky Mount; Jefferson Med., 1904	1905	1914
Battle, James P., Nashville; Univ. of Md., 1889	1888	1904
Boice, E. S., Rocky Mount; Univ. of Pa., 1909	1914	1915
Brantley, Hassell, Spring Hope; Jeff. Med. Coll., 1888	1888	1901
Brantley, J. C., Spring Hope; Jeff. Med. Coll., 1916	1916	1922
Coppedge, T. O., Nashville; P. and S., Balt., 1908	1909	1917
Cutchin, J. Henry, Whitakers; Univ. Coll. of Med., Richmond, 1911	1911	1915
Daughtridge, A. L., Rocky Mount; Univ. of Md., 1924	1924	1924
Deans, A. W., Battleboro; Med. Coll. of Va., 1915	1915	1917
Dixon, W. H., Rocky Mount; Jefferson Med. Coll., 1919	1919	1922
Fleming, M. I., Rocky Mount; Jeff. Med. Coll., 1905	1906	1919
Hines, E. R., Rocky Mount; Med. Coll. of S. C., 1916	1916	1917
Knowles, D. L., Rocky Mount; Univ. of Pa., 1918	1918	1920
Kornegay, Lemuel W., Rocky Mount; N. C. Med. Coll., 1906	1906	1914
Lane, John L., Rocky Mount; N. C. Med. Coll., 1906	1906	1914
Large, H. Lee, Rocky Mount; Med. Coll. of Va., 1917	1918	1918
Looney, J. J. W., Rocky Mount; Univ. of Va., 1909	1919	1919
Marriott, Henry B., Battleboro; Mo. Med. Coll., St. Louis, 1883	1883	1904
Martin, J. H., Red Oak; Univ. of Nashville, 1903	1904	1916
Orr, W. J. B., Rocky Mount; Univ. of Md., 1920	1920	1922
Perry, E. M., Rocky Mount; P. and S., Balt., 1907	1908	1920
Quillen, Emile B., Rocky Mount; Univ. of Md., 1904	1906	1914
Smith, C. T., Rocky Mount; Univ. of Pa., 1918	1918	1920
Speight, J. A., Rocky Mount; Tulane Univ., 1914	1915	1916
Speight, J. P., Rocky Mount; Jeff. Med. Coll., 1906	1906	1917
Staley, S. Walter, Rocky Mount; Med. Coll. of S. C., 1901	1901	1914
Strickland, J. T., Nashville; Univ. of Md., 1890	1890	1904
Willis, B. C., Rocky Mount; Med. Coll. of Va., 1909	1916	1916
Wimberly, G. L., Rocky Mount; Univ. of Md., 1883	1883	1916
Winstead, J. A., Nashville; N. C. Med. Coll., 1914	1916	1916
Whitehead, J. P., Rocky Mount; Univ. of Md., 1899	1899	1914

NEW HANOVER COUNTY

President: S. Everett Koonce, Wilmington; P. and S., Balt., 1896	1896	1900
Secretary: D. B. Sloan, Wilmington; Univ. of Pa., 1914	1914	1920
Barefoot, Graham B., Wilmington; Jeff. Med. Coll., 1923	1923	1924
Bellamy, Robert H., Wilmington; Jeff. Med. Coll., 1902	1902	1902
Bowdoin, George W., Wilmington; Med. Coll. of Va., 1914	1914	1916
Bulluck, Ernest S., Wilmington; Univ. of Md., 1911	1911	1911
Codington, H. A., Wilmington; Univ. of Md., 1911	1915	1917
Cranmer, J. B., Wilmington; Univ. of N. C., 1905	1905	1907

Name and Address	*Licensed*	*Joined State Society*
Croom, G. H., Wilmington; N. C. Med. Coll., 1909	1909	1916
Crouch, A. McR., Wilmington; Jeff. Med. Coll., 1916	1916	1918
Davis, Ralph H., Wilmington; George Washington Univ., 1917	1920	1920
Elliot, A. H., Wilmington; Jeff. Med. Coll., 1919	1919	1921
Evans, J. E., Wilmington; Univ. of Md., 1916	1921	1916
Farthing, L. E., Wilmington; Univ. of N. C., 1906	1906	1913
Freeman, J. D., Wilmington; Med. Coll. of Va., 1918	1921	1922
Galloway, Walter Curtis, Wilmington, (Hon.); Washington Univ., 1874	1880	1880
Graham, Benj. R., Wilmington; Univ. of Va., 1895	1895	1916
Green, Thomas M., Wilmington; Univ. of Md., 1900	1901	1904
Hall, James S., Wilmington; Univ. of S. Calif., 1900	1921	1924
Hamilton, John H., Wilmington; Med. School of Harvard, 1916		1922
Harris, Andrew H., Wilmington; Medico-Churugical Coll., Phila., 1893	1892	1894
Hart, E. R., Wilmington; Univ. of Md., 1901	1901	1918
Hoggard, J. T., Wilmington; Univ. Med. Coll., Richmond, 1906	1906	1922
Honnet, Joseph H., Wilmington; Columbia Univ., 1900	1901	1904
Hooper, Joseph W., Wilmington; Univ. of Md., 1909	1912	1919
Jewett, Robert D., Wilmington, (Hon.); Univ. of Va., 1888	1890	1890
Johnson, Geo. W., Wilmington; Univ. of Pa., 1920	1920	1921
McMillan, W. D., Wilmington, (Hon.); Univ. of Md., 1869	1885	1892
Mebane, W. C., Wilmington; N. C. Med. Coll., 1905	1905	1916
Miller, J. F., Wilmington; Med. Chi., Phila., 1906	1915	1919
Moore, Julian A., Wilmington; Univ. of Pa., 1918	1918	1921
Moore, W. Houston, Wilmington; Jeff. Med. Coll., 1910	1910	1911
Murchison, D. R., Wilmington; Johns Hopkins, 1916	1922	1923
Murphy, John G., Wilmington; Univ. of Louisville, 1903	1903	1905
Nesbitt, Charles T., Akron, Ohio; Baltimore Med. Coll., 1893	1907	1908
Newton, Howard L., Wilmington; Northwestern, 1922	1923	1924
Peterson, W. C., Wilmington; Univ. of Va., 1917	1920	1921
Robertson, James F., Wilmington; Univ. of Pa., 1913	1913	1916
Schonwald, John T., Wilmington, (Hon.); Long Island Coll. Hosp., 1879	1880	1881
Sidbury, J. B., Wilmington; Columbia Univ., 1912	1915	1916
Slocum, R. B., Wilmington; Johns Hopkins, 1905	1907	1907
Smith, Slade A., Wilmington; N. C. Med. Coll., 1907	1907	1921
Wessell, John C., Wilmington; Univ. of Md., 1900	1900	1900
Wood, E. J., Wilmington; Univ. of Pa., 1902	1903	1903

NORTHAMPTON COUNTY SOCIETY

President: L. E. McDaniel, Lasker; Univ. of Md., 1911	1915	1916
Secretary: Clifton G. Parker, Woodland; Univ. Coll. of Med., 1907	1907	1913
Boone, S. B., Jackson; Univ. Coll. of Med., 1911	1911	1921
Fleetwood, Jos. C., Conway; Tulane, 1921	1921	1923
Lewis, H. W., Jackson, (Hon.); Univ. of N. Y., 1877	1885	1887
Lister, J. L., Jackson; Med. Coll. of Va., 1896	1896	1909
Parker, C. P., Seaboard; Univ. Coll. of Med., Va., 1915	1915	1916
Parker, Paul G., Jackson; Med. Coll. of Va., Richmond, 1916	1916	1917

Name and Address	*Licensed*	*Joined State Society*
Parker, Walter R., Woodland; Med. Coll. of Va., 1916	1916	1919
Vaughan, J. C., Rich Square; Med. Coll. of Va., 1915	1915	1916

ONSLOW COUNTY

President: John P. Henderson, Swansboro; Va. Med. Coll., 1918	1919	1921
Secretary: A. M. McCuiston, Richlands; N. C. Med. Coll., 1911	1911	1917
Bryan, Lorenzo D., Sneads Ferry; Tulane, 1910	1910	1911
Cox, E. L., Jacksonville, (Hon.); Univ. of Md., 1889	1889	1892
Sutton, Carl W., Richlands; Tulane Med. Coll., 1905	1905	1907
Thompson, Cyrus, Jacksonville; Tulane Univ., 1878	1885	1905

PAMLICO COUNTY SOCIETY

President: D. A. Dees, Bayboro; Balt. Med. Coll., 1903	1903	1905
Secretary: J. J. Purdy, Oriental; Med. Coll. of Va., 1900	1914	1915
Daniels, O. C., Oriental; Med. Coll. of Va., 1903	1903	1916
McCotter, St. Elmo, Bayboro; P. and S., Atlanta, 1908	1908	1909

PASQUOTANK-CAMDEN-DARE COUNTIES SOCIETY

President:		
Secretary: M. S. Bulla, Elizabeth City; Miami Med. Coll., Cincinnati, O., 1905	1921	1922
Combs, Howard J., Elizabeth City; Jeff. Med. Coll., 1918	1918	1919
Fearing, Isaiah, Elizabeth City; P. and S., Balt., 1896	1896	1904
Fearing, Zenas, Elizabeth City; Univ. Coll. of Med., 1901	1901	1914
Griggs, John B., Elizabeth City; Univ. of Md., 1891	1892	1904
Hoggard, Wm. Alden, Hertford, Rt. 3; Univ. Coll. Med., Va., 1907; Vanderbilt Univ., 1914	1907	1910
Hoyle, Hughes B., Manteo; N. C. Med. Coll., 1896	1896	1904
Johnston, W. W., Manteo; N. C. Med. Coll., 1913	1913	1920
Kendrick, R. L., Elizabeth City; Univ. of Va., 1913	1913	1915
Lister, E. W., Weeksville; Med. Coll. of Va., 1896	1896	1916
Newby, G. E., Hertford; Jeff. Med. Coll., 1900	1901	1916
Peters, W. A., Elizabeth City; Med. Coll. of Va., 1915	1915	1916
Saliba, John, Elizabeth City; Univ. of Edinburgh, Scotland, 1893	1914	1914
Sawyer, W. W., Elizabeth City; Univ. of Md., 1903	1903	1904
Stephens, W. L., Shiloh; Univ. Coll. of Va., 1912	1912	1914
Walker, H. D., Elizabeth City; Univ. of Md., 1902	1902	1902
Williams, Claude B., Elizabeth City; Univ. Coll. of Med., Richmond, 1903	1903	1907

PENDER COUNTY SOCIETY

President:		
Secretary:		
Taylor, W. I., Burgaw; N. C. Med. Coll., 1902	1904	1905

PERSON COUNTY SOCIETY

President:		
Secretary:		
Baynes, R. S., Hurdle Mills; P. and S., Balt., 1881	1881	1904
Bradsher, Wm. A., Roxboro; Univ. of Md., 1904	1904	1905

Name and Address	*Licensed*	*Joined State Society*
Gentry, Geo. W., Timberlake; Univ. of N. C., 1910	1910	1911
Hambrick, Robt. T., Roxboro; Univ. of Tulane, 1923	1923	1924
Long, D. T., Hurdle Mills; Emory Univ. of Med., 1917	1917	1919
Long, Walter T., Roxboro; Balt. Med. Coll., 1905	1905	1907
Love, Bedford E., Roxboro; Univ. of Md., 1904	1904	1905
Merritt, John H., Woodsdale, Rt. 2; Univ. of N. C., 1906	1907	1908
Nichols, Austin F., Roxboro; Univ. of N. C., 1908	1908	1909
Thaxton, B. A., Roxboro; Jeff. Med. Coll., 1914	1914	1916

PITT COUNTY SOCIETY

President: J. C. Green, Greenville; Med. Coll. of Va., 1900	1900	1915
Secretary: B. T. Cox, Winterville; Univ. of Md., 1888	1888	1890
Beasley, E. B., Fountain; Univ. of Pa. School of Med., 1911	1911	1915
Dawson, Walter W., Grifton; Univ. of Md., 1897	1897	1900
Dickinson, Elijah T., Greenville; Med. Coll. of Va., 1895	1895	1900
Dixon, G. G., Ayden; Med. Coll. of Va., 1915	1915	1917
Dixon, Joseph, Greenville; Med. Coll. of Va., 1894	1893	1895
Dixon, Wm. H., Ayden; Med. Coll. of Va., 1901	1901	1903
Ellen, C. J., Greenville; Univ. Coll. of Med., Richmond, 1911	1911	1919
Frizzell, M. T., Ayden; Univ. of Md., 1907	1907	1909
Garrenton, Cecil, Bethel; Med. Coll. of Va., 1908	1908	1915
Hemingway, J. D., Bethel; N. C. Med. Coll., 1915	1917	1917
Jones, C. M., Grimesland, (Hon.); Univ. of Md. and P. and S., Balt., 1892	1892	1895
Laughinghouse, Chas. O'H., Greenville, (Hon.); Univ. of Pa., 1893	1893	1894
Morrill, D. S., Farmville; Balt. Med. Coll., 1897	1897	1903
Morrill, Jenness, Falkland; Univ. of Md., 1888	1888	1900
Moseley, H. P., Farmville; Univ. Coll. of Med., Richmond, 1912	1912	1915
Nobles, Jos. E., Greenville, (Hon.); Jeff. Med. Coll., 1899	1899	1902
Outland, C. L., Greenville; Med. Coll. of Va., 1917	1917	1920
Pace, K. B., Greenville; Jeff. Med. Coll., 1914	1914	1920
Skinner, Louis Cotton, Greenville; Univ. of Md., 1901	1901	1903
Ward, Vernon Albert, Greenville; Jeff. Med. Coll., 1908	1908	1914
Whitfield, Wm. Cobb, Grifton, (Hon.); Univ. of Md., 1884	1884	1884
Willis, W. M., Greenville; Med. Coll. of Va., 1914	1915	1924

RANDOLPH COUNTY SOCIETY

President: Charles C. Hubbard, Farmer; Jeff. Med. Coll., 1888	1890	1904
Secretary: W. L. Lambert, Asheboro; Jeff. Med. Coll., 1921	1921	1923
Barber, Y. M., Liberty; Univ. of Md., 1914	1917	1918
Craven, F. C., Ramseur; Univ. of Md., 1913	1913	1914
Hayworth, C. A., Asheboro; Univ. of Md., 1913	1913	1914
Hunter, J. V., Asheboro; Univ. of Louisville, 1898	1898	1905
Moore, Wm. James, Asheboro; P. and S., Balt., 1893	1893	1901
Myers, R. W., Fullers, Rt. 1; Chattanooga Med. Coll., 1897	.....	1909
Redding, Alex H., Cedar Falls; Coll. of P. and S., Balt., 1887	1881	1904
Sumner, G. H., Asheboro	1923	1924
Sumner, Wm. I., Randleman; Univ. of Tenn., 1893	1894	1904

Name and Address	*Licensed*	*Joined State Society*
Tate, C. S., Ramseur; Balt. Med. Coll., 1893	1896	1914
Wilkerson, Charles E., Randleman; Univ. of Nashville, Tenn., 1907	1908	1909

RICHMOND COUNTY SOCIETY

President: W. D. James, Hamlet; Jeff. Med. Coll., Phila., 1908	1908	1915
Secretary: A. C. Everett, Rockingham; Univ. of Md., 1897	1897	1903
Bristow, C. O., Rockingham; Jeff. Med. Coll., 1918	1920	1921
Garrett, F. B., Rockingham; N. C. Med. Coll., 1912	1912	1914
Garrett, F. J., Rockingham; Univ. of Md., 1889	1887	1904
Hatcher, M. A., Hamlet; Med. Coll. of Va., 1918	1920	1921
Henry, T. B., Rockingham; Columbia Univ. Coll. P. and S., N. Y., 1917	1920	1921
Howell, W. L., Ellerbe; N. C. Med. Coll., 1910	1910	1911
Hunter, Norman C., Rockingham; Medico-Chi. of Phila., 1899	1899	1904
James, Albert W., Hamlet; Jeff. Med. Coll., Phila., 1918	1918	1921
Kinsman, Henry F., Hamlet; Univ. of Vermont, 1894	1897	1904
Ledbetter, James McQ., Rockingham; Vanderbilt Univ., 1894	1894	1903
McIntosh, W. R., Roberdell; N. C. Med. Coll., 1913	1916	1917
Maness, J. M., Ellerbe; Univ. of N. C., 1909	1909	1910
Terry, Wm. Calvin, Hamlet; N. C. Med. Coll., 1911; Univ. of Md., 1912	1912	1914
Webb, W. P., Rockingham; Med. Coll. of S. C., 1897	1897	1904

ROBESON COUNTY SOCIETY

President: Nathan H. Andrews, Rowland; N. C. Med. Coll., 1911	1911	1912
Secretary: W. E. Evans, Rowland; Med. Coll. of Va., 1894	1894	1904
Baker, Horace M., Lumberton; Harvard Med. School, 1917	1919	1919
Beam, R. S., Lumberton; Jeff. Med. Coll., 1912	1912	1915
Bowman, E. L., McDonalds; Med. Coll. of Va., 1914	1914	1916
Britt, J. N., Lumberton; Emory Univ., 1914	1923	1924
Brown, J. P., Fairmont; Univ. of Md., 1883	1887	1893
Carmichael, Thaddeus W., Rowland; Ky. Univ. Med. Dept., 1904	1911	1919
Costner, Thos. F., Lumberton; Jeff. Med. Coll., 1882	1885	1918
Hall, P. B., Pembroke; N. C. Med. Coll., 1903	1903	1904
Hardin, E. R., Lumberton; Univ. of Ga., 1911	1915	1920
Hays, A. H., Fairmont; Emory Univ., 1917	1917	1919
Hodgin, H. H., Red Springs; Univ. of Md., 1905; N. C. Med. Coll., 1906	1906	1907
Johnson, C. T., Red Springs; Jeff. Med. Coll., 1920	1920	1922
Johnson, Thomas C., Lumberton; Univ. Coll. of Med., Richmond, 1903	1903	1903
McClelland, Joseph O., Maxton; Med. Coll. of Va., Richmond, 1908	1912	1913
McMillan, Benj. F., Red Springs, (Hon.); Univ. of Md., 1882	1884	1884
McMillan, R. D., Red Springs; Univ. of Md., 1910	1911	1912
Martin, J. A., Lumberton; Med. Coll. of Va., Richmond, 1915	1915	1917
Morris, Carlyle, Maxton; Univ. of Pa., 1922	1922	1924
Nash, J. Fred, St. Pauls; N. C. Med. Coll., 1914	1914	1916
Poole, Claud T., St. Pauls; N. C. Med. Coll., 1907	1909	1913
Pope, Henry T., Lumberton; N. C. Med. Coll., 1894	1893	1902

Name and Address	*Licensed*	*Joined State Society*
Price, H. L., Fairmont; N. C. Med. Coll., 1914	1914	1920
Ricks, Leonard E., Fairmont; Med. Coll. of Va., 1896	1896	1913
Rozier, R. G., St. Pauls; Univ. of Md., 1899	1899	1904
Smith, John McNeill, Rowland; Jeff. Med. Coll., 1908	1908	1909
Stamps, Thos., Lumber Bridge, (Hon.); Univ. of Louisville, 1888	1888	1890
Whitehead, S. L., Lumberton; Jeff. Med. Coll., 1921	1921	1923

ROCKINGHAM COUNTY SOCIETY

President: James T. Taylor, Madison; Univ. of Md., P. and S., Balt., 1908	1908	1910
Secretary: P. W. Fetzer, Madison; Univ. of Va., 1916	1916	1920
Abernathy, Miles B., Reidsville; N. C. Med. Coll., 1906	1906	1910
Boaz, Thos. A., Stoneville; Coll. of P. and S., Baltimore, 1892	1892	1905
Carter, P. C., Madison; Univ. of Md., 1916	1916	1920
Casteen, Kenan, Mayodan; Univ. of Bellevue Hosp. Med. Coll., 1919	1919	1921
Cummings, M. P., Reidsville; Jeff. Med. Coll., 1911	1911	1914
Dillard, G. P., Draper; Loyola Univ. School of Med., 1916	1916	1919
Dixon, Hubert C., Madison; Univ. and Bellevue Hosp Med. Coll., 1916	1916	1921
Jett, Samuel G., Reidsville; Univ. of the South, 1903	1908	1911
Johnson, W. A., Reidsville; R. F. D.; N. C. Med. Coll., 1907	1909	1910
McBryde, M. H., Reidsville; Univ. Coll. of Med., Richmond, 1901	1901	1904
McGehee, John Wm., Reidsville; Univ. of Md., 1904	1904	1905
Martin, Sydnor L., Leaksville; Balt. Med. Coll., 1892	1892	1904
Matthews, Wm. W., Spray; Chicago Coll. of Med. and Surg., 1913	1915	1918
Pritchett, H. W., Reidsville; Tulane Univ., 1919	.....	1924
Ray, John B., Leaksville; Balt. Med. Coll., 1898	1898	1898
Stewart, J. T., Summerfield, R. F. D.	1898	1898
Taylor, T. G., Leaksville; Ky. School of Med., 1877	1877	1910
Tuttle, A. F., Spray; N. C. Med. Coll., 1901	1901	1907
Webb, S. Edgar, Draper; Univ. of N. C., 1908	1908	1916
Wharton, Chas. R., Ruffin; Med. Coll. of Va., 1897	1897	1904
Wilson, W. P., Madison; N. C. Med. Coll., 1908	1908	1916

ROWAN COUNTY SOCIETY

President: Frederick G. Sigman, Spencer; Univ. Med. Coll. of Va., 1909	1909	1910
Secretary: James Ernest Stokes, Salisbury; Univ. of Md., 1892	1900	1901
Armstrong, C. W., Salisbury; Univ. of Md., 1914	1914	1915
Black, O. R., Landis; N. C. Med. Coll., 1914	1914	1918
Boyden, Wm. C., China Grove; N. C. Med. Coll., 1913	1913	1914
Brawley, M. H., Salisbury; N. C. Med. Coll., 1910	1912	1914
Brawley, Robert V., Salisbury; Univ. Coll. of Med., Va., 1901	1901	1904
Brown, Clarence E., Faith; N. C. Med. Coll., 1918	1920	1921
Brown, G. A., Mt. Ulla; Univ. Coll. of Med., 1897	1897	1898
Busby, Julian G., Spencer; Univ. of Md., 1904	1904	1905
Choate, Glenn Wm., Salisbury; N. C. Med. Coll., 1909	1909	1909

Name and Address	*Licensed*	*Joined State Society*
Choate, J. W., Salisbury; N. C. Med. Coll., 1915	1915	1924
Clement, Edward B., Salisbury; Jeff. Med. Coll., 1906	1906	1913
Councill, J. B., Salisbury, (Hon.); P. and S., Balt., 1885	1885	1885
Ellis, Frank A., Salisbury; Univ. of Pa., 1918	1919	1919
Flemming, G. M., Cleveland; Emory Univ. School of Med., 1919	1919	1921
Heilig, Herman G., Salisbury; Univ. of Md., 1899	1899	1904
McKenzie, B. W., Salisbury; Jeff. Med. Coll., 1916	1916	1920
McKenzie, Wm. W., Salisbury, (Hon.); Jeff. Med., 1893	1893	1894
Marsh, Frank B., Salisbury; Jeff. Med. Coll., 1919	1919	1922
Monk, Henry L., Salisbury; Med. Coll. of Va., 1899	1899	1903
Newman, Harold H., Salisbury; Johns Hopkins Univ., 1913	1914	1916
Peeler, John H., Salisbury; Va. Univ. Coll. of Med., 1899	1899	1904
Ramsay, Jas. G., Salisbury; Univ. of Pa., 1922	1924	1924
Richardson, R. W., Salisbury; Univ. of Maryland, 1920	.....	1923
Seay, T. W., East Spencer; Univ. of Md., 1921	1922	1924
Shafer, Irving E., Salisbury; N. C. Med. Coll., 1914	1914	1914
Slate, Wesley C., Spencer; Univ. of Tenn., 1903	1903	1913
Spencer, Frederick B., Salisbury; Univ. of N. C., 1909	1909	1911
Summerell, E. M., China Grove, (Hon.); Univ. of Pa., 1883	1883	1883
Tatum, Walter Lowe, Salisbury; Jeff. Med. Coll., 1922	1922	1924
Trantham, H. T., Salisbury, (Hon.); Univ. of N. Y., 1875	1879	1879
Van Poole, C. M., Salisbury ,(Hon.); P. and S., Balt., 1880	1880	1880
West, Robert M., Salisbury; Med. Coll. of Va., 1900	1900	1904
Whitehead, John, Salisbury, (Hon.); Univ. of Pa., 1880	1880	1880
Woodson, Charles W., Salisbury; Columbia Univ., P. and S., N. Y., 1904	1905	1907

RUTHERFORD COUNTY SOCIETY

President: Thos. C. Lovelace, Henrietta; N. C. Med. Coll., 1917	1920	1920
Secretary: Wm. C. Bostic, Forest City; Chattanooga Med. Coll., 1899; N. C. Med. Coll., 1905	1905	1905
Allhands, John M., Cliffside; Chicago Coll. of Med. and Surg., 1910	1910	1911
Andrews, Robert M., Bostic; Memphis Hosp. Med. Coll., 1901	1904	1905
Biggs, Montgomery H., Rutherfordton; Univ. of Pa., 1897	1907	1908
Buchanan, C. L., Union Mills; Univ. of Tennessee, 1910	1910	1914
Crawford, Robt. H., Rutherfordton; Johns Hopkins, 1914	1920	1921
Duncan, Amos C., Forest City; N. C. Med. Coll., 1919	1919	1920
Gold, Charles F., Ellenboro; Univ. of N. C., 1910	1910	1911
Harrill, L. B., Caroleen; Chattanooga Med. Coll., 1897	1902	1904
Head, W. T., Campobello, S. C., Rt. 4; Atlanta Coll., P. and S., 1911	1911	1923
Hicks, Romeo, Henrietta; Southern Med. Coll., Atlanta, 1888	.....	1899
Hunt, J. F., Spindale; Univ. of Tenn., 1900	1900	1912
Logan, F. W. F., Rutherfordton; N. C. Med. Coll., 1916	1916	1919
Murphy, D. P., Rutherfordton; Univ. of Pa., 1916	1922	1923
Norris, Henry, Rutherfordton; Univ. of Pa., 1896	1907	1908
Reid, George P., Forest City; Univ. Coll. of Med., Va., 1895	1894	1899
Rucker, Adin Adam, Rutherfordton; Univ. of Md., 1908	1908	1909
Schenck, D. R., Rutherfordton; Jeff. Med. Coll., 1883	1884	1918

Name and Address	*Licensed*	*Joined State Society*
Thompson, W. A., Rutherfordton; P. and S., Balt., 1885	1895	1904
Twitty, John C., Rutherfordton; Balt. Med. Coll., 1892	1892	1904

SAMPSON COUNTY SOCIETY

President: A. A. Maynard, Kerr; Coll. of P. and S., Balt., 1885	1885	1923
Secretary: E. T. Hollingsworth, Clinton; N. C. Med. Coll., 1912	1912	1915
Brewer, J. Street, Roseboro; Jeff. Med. Coll., 1919	1919	1921
Butler, B. F., Clinton; Univ. Coll. of Med., Richmond, 1911	1911	1916
Crumpler, Paul, Clinton; Univ. of Tenn., 1907	1907	1908
Kerr, John D., Clinton; Univ. of Md., 1908	1908	1910
Lee, J. Marshall, Newton Grove; Med. Coll. of Va., 1916	1920	1923
Matthews, James O., Clinton, R. F. D.; Univ. Coll. of Med., Va., 1879	1879	1902
Parker, J. R., Clinton; Baltimore Med. Coll., 1898	1898	1919
Parker, O. L., Clinton; Med. Coll. of Va., 1918	1918	1919
Sessoms, E. T., Autryville; N. C. Med. Coll., 1915	1915	1917
Sikes, Gibson L., Salemburg; Univ. Coll. of Med., Va., 1900	1900	1902
Sloan, Wm. H., Garland; Univ. of Maryland, 1916	1916	1920
Small, V. R., Clinton; Ohio State Univ., 1916	1920	1924
Underwood, O. E., Roseboro; Univ. Coll. of Med., Va., 1909	1909	1910
Wilson, Robert B., Newton Grove; Ky. School of Med., 1889	1889	1904
Wysong, H. C., Kerr; Univ. of Nash., and Tenn., 1911	1921	1924

SCOTLAND COUNTY SOCIETY

President: Peter John, Laurinburg; Univ. of Md., 1897	1897	1904
Secretary: E. A. Erwin, Laurinburg; Med. Coll. of S. C., 1912	1912	1913
Buchanan, L. T., Laurinburg; Jeff. Med. Coll., 1913	1913	1917
Gibson, John S., Gibson; Univ. of Md., 1905	1905	1907
James, F. P., Laurinburg; Univ. of Pa., 1916	1916	1908
Livingston, Everett Alex., Gibson; Univ. of Md., 1912	1912	1913
McLean, Allen, Wagram; Univ. of Md., 1908	1908	1911
McLean, Peter, Laurinburg; Univ. of Md., 1906	1907	1908
Pate, James G., Gibson; Univ. of Pa., 1916	1916	1917
Shaw, W. G., Wagram; P. and S., Balt., 1892	1895	1904
Wilcox, J. W., Laurel Hill; Univ. of N. C., 1906	1906	1906
Wilkes, Marcus B., Laurel Hill; N. C. Med. Coll., 1912	1912	1923

STANLY COUNTY SOCIETY

President:	.....	.....
Secretary: Julius Clegg Hall, Albemarle; Univ. Coll. of Med., Va., 1899	1899	1908
Allen, Jos. A., New London; Univ. Coll. of Med., Va., 1901	1901	1904
Anderson, Jasper N., Albemarle; Univ. of Md., 1895	1895	1895
Brunson, E. P., Albemarle; Jeff. Med. Coll., 1921	1922	1923
Campbell, Jas. I., Norwood; N. C. Med. Coll.	1898	1904
Cox, Benj. F., Palmerville; Coll. of P. and S., Balt., 1886	1886	1908
Dunlap, Lucius Victor, Albemarle; Univ. of N. C., 1909	1909	1910
Hartsell, F. E., Oakboro; Balt. Med. Coll., 1895	1895	1902

Name and Address	*Licensed*	*Joined State Society*
Hathcock, Thomas A., Norwood; Univ. of Md., 1893	1893	1904
Hill, Wm. Isaac, Albemarle; Univ. of Md., and P. and S., Balt., 1897	1897	1904
Laton, James F., Albemarle; N. C. Med. Coll., 1904	1904	1910
Lentz, C. M., Albemarle; N. C. Med. Coll., 1909	1909	1910
Moore, D. Bain, Badin; Univ. Coll. of Med., Va., 1913	1913	1915
Shaver, W. T., Badin; Univ. of Md., 1919	1919	1921
Tally, B. T., Albemarle; Jeff. Med. Coll., 1921	1921	1922

STOKES COUNTY SOCIETY

President: S. F. Tillotson, King; N. C. Med. Coll., 1905	1905	1922
Secretary: R. H. Morefield, Westfield, Rt. 1; N. C. Med. Coll., 1906	1906	1917
Ellington, Jas. H., Sandy Ridge; P. and S., Balt., 1872	1885	1904
Furr, William C., Sandy Ridge; Jeff. Med. Coll., 1923	1923	1924
Hanes, J. L., Pine Hall; Univ. of Maryland, 1902	1902	1920
Helsabeck, C. J., Germantown; Univ. of Md., 1919	1919	1922
Helsabeck, R. S., Mizpah; N. C. Med. Coll., 1913	1913	1920
Jones, A. G., Walnut Cove, (Hon.); Univ. of N. Y., 1868	1894	1892
Phillips, M. D., Dalton, (Hon.); Univ. of N. Y., 1881	1881	1882
Stone, Grady E., King; N. C. Med. Coll., 1915	1915	1920

SURRY COUNTY SOCIETY

President: R. R. Garvey, Elkin; N. C. Med. Coll., 1915	1915	1919
Secretary: R. C. Mitchell, Mt. Airy; Univ. of Pa., 1919	1921	1923
Ashby, E. C., Mt. Airy; Univ. of Pa., 1914	1914	1916
Baird, C. A., Mt. Airy; N. C. Med. Coll., 1904	1904	1912
Bernard, Holman, Pinnacle; Med. Coll. of Va., 1912	1914	1919
Bryant, Charles G., Elkin; Louisville Med. Coll., 1894	1902	1904
Flippin, R. E. L., Pilot Mt.; Balt. Med. Coll., 1892	1897	1901
Flippin, Samuel T., Siloam; N. C. Med. Coll., 1898	1898	1898
Folger, P. B., Dobson; Jeff. Med., 1922	1922	1924
Gambill, I. S., North Wilkesboro; N. C. Med. Coll., 1912	1912	1917
Hollingsworth, Edward M., Mt. Airy; Coll. of P. and S., Baltimore, 1886	1886	1904
Hollingsworth, Robert E., Mt. Airy; Univ. Coll. of Med., Va., 1898	1898	1904
Lancaster, R. McN., Mt. Airy; N. C. Med. Coll., 1914	1916	1917
Lovill, Robert Jones, Mt. Airy; Univ. of Md., 1910	1910	1912
Martin, Moir S., Mt. Airy; Univ. Coll. of Med., Va., 1905	1909	1916
Ring, Joseph W., Elkin; P. and S., Balt., 1880	1885	1904
Rowe, H. B., Mt. Airy; Univ. of Md., 1910	1910	1914
Royall, M. A., Elkin; P. and S., Balt., 1885	1885	1913
Salmons, H. C., Elkin; N. C. Med. Coll., 1904	1904	1908
Smith, Jas. B., Pilot Mt.; P. and S., Balt., 1885	1885	1896
Smith, James T., Westfield; N. C. Med. Coll., 1898	1899	1918
Stone, Wesley M., Dobson; N. C. Med. Coll., 1906	1906	1907
Taylor, William S., Mt. Airy; Jeff. Med. Coll., Phila., 1873	1885	1894
Wellborn, William R., Elkin; N. C. Med. Coll., 1905	1908	1913
Williams, Lester L., Mt. Airy; Md. Med. Coll., 1913	1913	1916
Woltz, J. L., Mt. Airy; Southern Med. Coll., 1897	1902	1904

SWAIN COUNTY SOCIETY

Name and Address	*Licensed*	*Joined State Society*
President:		
Secretary:		
Holt, R. D., Cherokee; Med. Coll. of Va., 1899	1899	1904

TRANSYLVANIA COUNTY SOCIETY

President:		
Secretary:		
Lyday, Abram E., Penrose; Lincoln Mem. Univ., 1891	1909	1904
Lyday, Wm. Monroe, Brevard; Coll. of P. and S., 1885	1885	1904
Lynch, Geo. B., Brevard; Johns Hopkins Univ., 1914	1920	1923
Summey, T. J., Brevard; Jeff. Med. Coll., 1915	1915	1916

UNION COUNTY SOCIETY

President: A. D. N. Whitley, Unionville; Univ. of Md., 1897	1897	1904
Secretary: Jas. C. Richardson, Monroe; Vanderbilt Univ., 1920	1920	1923
Armfield, Romulus, Marshville; Med. Coll. of Va., 1881	1885	1904
Blair, M. P., Marshville; Med. Coll. of Va., 1895	1895	1895
Garren, R. H., Monroe; Univ. of Nashville, 1900	1901	1904
Goudelock, Jno. J., Monroe; Med. Coll. of S. C., 1923	1924	1924
Jerome, James R., Wingate; Univ. of Md., 1890	1890	1904
Love, William M., Unionville; N. C. Med. Coll., 1915	1915	1919
Mahoney, A. F., Monroe; Univ. Louisville, 1911	1923	1924
Nanée, George B., Monroe; Jeff. Med. Coll., Phila., 1885	1885	1904
Neal, John W., Monroe; N. Y. Univ. Med. Coll., 1884	1887	1904
Payne, R. L., Monroe; Tulane Univ., 1911	1911	1912
Perkins, David R., Marshville; Balt. Med. Coll., 1903	1906	1907
Pearson, Raymond, Monroe; S. C. State Med. Coll., 1922	1923	1924
Pruitt, G. C., Monroe; Atlanta Coll. of P. and S., 1911	1920	1920
Smith, G. M., Monroe; N. C. Med. Coll., 1914	1914	1919
Stewart, H. D., Monroe; Univ. of Md., 1898	1898	1904
Williams, Edward J., Monroe; Univ. and Bellevue Hosp. Med. Coll., 1917	1920	1921

VANCE COUNTY SOCIETY

President: Benjamin G. Allen, Henderson; Columbia Univ., 1904	1904	1908
Secretary: J. H. Wheeler, Henderson; Jeff. Med. Coll., 1918	1918	1920
Bass, H. H., Henderson; Univ. Coll. of Med., 1899	1899	1900
Cheatham, Goode, Henderson; N. C. Med. Coll., 1895	1895	1920
Fenner, Edwin F., Henderson; Univ. of Md., 1905	1906	1908
Furman, Wm. H., Henderson; Jeff. Med. Coll., 1910	1910	1912
Gill, Robt. J., Henderson; Univ. of Pa., 1867	1885	1890
Harris, Fletcher R., Henderson, (Hon.); Univ. of Va., 1881	1883	1883
McIntosh, Leland C., Henderson; Atlanta Coll. of Phys. and Surg., 1913	1914	1914
Newell, H. A., Henderson; P. and S., Balt., 1906	1906	1907
Royster, Thomas S., Henderson; Univ. of Pa., 1916	1916	1924
Upchurch, Robert T., Henderson; Jeff. Med. Coll., Phila., 1908	1908	1910

WAKE COUNTY SOCIETY

Name and Address	*Licensed*	*Joined State Society*
President: Hubert B. Haywood, Jr., Raleigh; Univ. of Pa., 1909	1909	1910
Secretary: B. J. Lawrence, Raleigh; Jeff. Med. Coll., 1918	1918	1920
Abernathy, Claude O., Raleigh; Univ. of N. C., 1906	1906	1907
Adams, R. K., Raleigh; Jeff. Med. Coll., Phila., 1912	1912	1916
Anderson, Albert, Raleigh, (Hon.); Univ. of Va., 1888	1889	1890
Ashby, J. W., Raleigh; Univ. of Md., 1905	1921	1922
Barbee, G. S., Zebulon; Univ. of N. C., 1910	1910	1912
Bell, Carl W., Raleigh; Coll. of P. and S., Balt., 1914	1915	1916
Blalock, Nathan M., McCullers; P. and S., Balt., 1890	1890	1904
Bonner, H. M., Raleigh; Med. Coll. of Va., 1897	1897	1918
Broughton, N. B., Raleigh; Univ. of Penn., 1919	1919	1921
Buffaloe, J. S., Garner; Balt. Med. Coll., 1900	1900	1904
Bulla, A. C., Raleigh; N. C. Med. Coll., Charlotte, 1915	1915	1918
Burt, B. W., Holly Springs; P. and S., Balt., 1886	1886	1904
Campbell, Alton C., Raleigh; Univ. of N. C., 1910	1910	1912
Caveness, Zebulon M., Raleigh; Univ. of N. C., 1903	1903	1903
Cheek, C. E., Fuquay Springs; Univ. Coll. of Med., Va., 1912	1912	1914
Cooper, G. M., Raleigh; Univ. Coll. of Med., Richmond, 1905	1905	1906
Cozart, W. S., Fuquay Springs; Med. Coll. of Va., Richmond, 1914	1914	1917
Dewar, Wm. B., Raleigh; Univ. of Pa., 1920	1920	1923
Edwards, C. J., Raleigh; Med. Coll. of Va., 1917	1921	1923
Finch, O. E., Apex; Jeff. Med. Coll., Phila., 1915	1915	1917
Flowers, Clarence A., Wendell; P. and S., Balt., 1905	1905	1910
Flowers, C. E., Zebulon; Med. Coll., Va., 1913	1915	1916
Fowler, M. L., Zebulon; Coll. of P. and S., Balt., 1881	1885	1904
Freeman, R. H., Raleigh; Jeff. Med. Coll., 1908	1908	1919
Gibson, M. R., Raleigh; Univ. of Md., 1905	1905	1914
Goodwin, A. W., Raleigh, (Hon.); Bellevue Hosp. Med. Coll., 1887	1887	1887
Haywood, Hubert, Raleigh, (Hon.); Bellevue Hosp. Med. Coll., 1879	1879	1879
Hicks, V. M., Raleigh; Jeff. Med. Coll., 1918	1918	1921
Horton, M. C., Raleigh; Univ. Coll. of Med., Va., 1903	1911	1911
Horton, W. C., Raleigh; P. and S., Balt., 1897	1896	1904
Jenkins, Charles L., Raleigh; N. Y. Univ. Med. Coll., 1890	1890	1894
Johnson, Robert Wade, Apex; Univ. of Tenn., 1900	1901	1904
Jones, Carey C., Apex; Jeff. Med. Coll., 1920	1920	1923
Jordan, Thos. M., Raleigh, (Hon.); P. and S., Balt., 1881	1881	1882
Judd, Eugene C., Raleigh; Univ. of Pa., 1911	1911	1912
Judd, James M., Varina; Balt. Med. Coll., 1897	1897	1901
Kitchin, Thurman D., Wake Forest; Jeff. Med., 1908	1908	1908
Knox, Augustus W., Raleigh, (Hon.) Bellevue Hosp. Med. Coll., 1874	1878	1880
Lewis, Richard H., Raleigh, (Hon.); Univ. of Md., 1871	1877	1877
Long, E. F., Raleigh; Med. Coll., Va., 1909	1909	1912
Lowery, John R., Raleigh; Univ. of Md., 1904	1904	1913
McDowell, F. C., Zebulon; Univ. of Pa., 1902	1913	1916
McGee, James Wm., Raleigh, (Hon.); Bellevue Hosp. Med. Coll., 1888	1888	1888

Name and Address	Licensed	Joined State Society
McKee, John S., Raleigh; Univ. of Md., 1907	1908	1909
Neal, Kemp P., Raleigh; Harvard, 1917	1920	1921
Neal, Paul N., Raleigh; Harvard, 1919	1920	1921
Noble, R. P., Raleigh; Univ. of N. C., 1907	1907	1916
Proctor, I. M., Raleigh; Univ. of N. C., 1913; Univ. of Pa., 1915	1915	1917
Rankin, Watson S., Raleigh; Univ. of Md., 1901	1901	1901
Ray, O. L., Raleigh, Rt. 1; Univ. Coll. of Med., Richmond, 1899	1899	1904
Register, F. M., Raleigh; Ky. School of Med., 1893	1891	1918
Riggsbee, A. E., Morrisville; Univ. of N. C., 1909	1909	1911
Rogers, Jas. Rufus, Raleigh; P. and S., Balt., 1886	1886	1904
Root, Aldert S., Raleigh; Univ. of Pa., 1911	1911	1913
Royster, Hubert A., Raleigh; Univ. of Pa., 1894	1894	1895
Royster, W. I., Raleigh, (Hon.); Bellevue Hosp. Med. Coll., N. Y., 1869	1869	1874
Shore, Clarence A., Raleigh; Johns Hopkins, 1908	1909	1909
Stancill, Wm. W., Raleigh; Uni. Coll. of Med., Va., 1906	1906	1914
Strickland, W. M., Wendell; Med. Coll. of Va., 1919	1921	1923
Templeton, James McP., Cary; Balt. Med. Coll., 1882	1882	1893
Thompson, Hugh A., Raleigh; Univ. of Pa., 1914	1914	1917
Vann, H. M., Wake Forest; Jeff. Med. Coll., 1917	1920	1923
Washburn, B. E., Kingston, Jamaica, Box 257; Univ. Va., 1911	1912	1917
Watson, John B., Raleigh; Univ. of N. C., 1908	1908	1909
West, Louis N., Raleigh; Jeff. Med. Coll., Phila., 1912	1912	1915
Wilkerson, Charles B., Raleigh; Univ. of N. C., 1906	1906	1908
Wilkerson, T. E., Jr., Raleigh; Univ. of Pa., 1914	1914	1916
Wilkinson, C. T., Wake Forest; Tulane Univ., 1922	1922	1923
Wilkinson, R. W., Jr., Wake Forest; Tulane Univ., 1922	1923	1924
Wright, J. B., Raleigh; Univ. Coll. of Med., Va., 1899	1899	1900
Young, L. B., Wake Forest, Rt. 3; P. and S., Balt., 1886	1886	1906

WARREN COUNTY SOCIETY

President: G. H. Macon, Warrenton; Univ. Coll. of Med., Va., 1910	1910	1911
Secretary: H. H. Foster, Norlina; Jeff. Med. Coll., 1919	1919	1923
Holt, T. J., Warrenton; Med. Coll. of Va., 1904	1904	1911
Packard, F. S., Norlina; Bowdoin Med. School, Me., 1887	1907	1922
Peete, C. H., Warrenton; Univ. of Va., 1903	1906	1911
Rodgers, W. D., Warrenton; Jeff. Med. Coll., Phila., 1913	1913	1915

WASHINGTON-TYRRELL COUNTIES SOCIETY

President: John W. Speight, Roper; Ky. School of Med., 1885	1885	1904
Secretary: T. L. Bray, Plymouth; Univ. of Md., 1916	1916	1919
Hardison, William H., Creswell; Wash. Univ. of Md., 1870	1885	1890
McClees, Jas. E., Creswell; Med. Coll. of Va., 1916	1919	1920
McGowan, Claudius, Plymouth; Med. Coll. of Va., 1917	1917	1922
Mariner, N. B., Belhaven; Univ. Coll. of Med., Va., 1903	1903	1903
Norman, J. Standing, Columbia; Univ. of Md., 1909	1911	1924
Spruill, Jos. L., Jamestown; Univ. of Md., 1895	1895	1907
Ward, William H., Plymouth, (Hon.); Univ. of Md., 1881	1886	1886

WAYNE COUNTY SOCIETY

Name and Address	*Licensed*	*Joined State Society*
President: T. B. Henderson, Goldsboro; Med. Coll. of Va., 1906	1914	1915
Secretary: David J. Rose, Goldsboro	.....	1924
Benton, George Ruffin, Fremont; Med. Coll. of Va., 1901	1901	1904
Bizzell, Thomas M., Goldsboro; Univ. of Md., 1908	1908	1916
Cobb, Wm. H., Jr., Goldsboro; Jeff. Med. Coll., 1889	1889	1890
Corbett, L. W., Goldsboro	.....	1924
Faison, Wm. W., Goldsboro, (Hon.); Jeff. Med. Coll., 1878	1883	1883
Ginn, Theo. L., Goldsboro; Med. Coll. of Va., 1901	1901	1904
Hayes, L. O., Fremont; Univ. Coll. of Med., Va., 1897	1897	1904
Henderson, C. C., Mt. Olive; Univ. of Md., 1914	1914	1919
House, W. H., Goldsboro; Jeff. Med., 1915	1915	1922
Irwin, Henderson, Goldsboro; Univ. of Md., 1912	1914	1916
Ivey, H. B., Goldsboro; Univ. Coll. of Med., Richmond, 1911	1911	1917
Jones, Clara E., Goldsboro; Woman's Med. Coll. of Pa., 1894	1894	1897
Lassiter, C. L., Fremont; Jeff. Med., 1915	1915	1918
Linville, W. C., Goldsboro; Univ. of Md., 1903	1903	1923
Miller, Robert B., Goldsboro; Med. Coll. of Va., 1898	1900	1902
Morris, George B., Goldsboro; Univ. of Md., 1910	1910	1912
Parker, S. F., Mt. Olive, Med. Coll. of Va., 1901	1918	1922
Person, Edgar Cooper, Pikeville; Med. Coll. of Va., 1905	1905	1908
Smith, R. A., Goldsboro, (Hon.); Vanderbilt Univ., 1879	1882	1887
Smith, Wm. H., Goldsboro; Univ. of Pa., 1906	1907	1912
Spicer, William, Goldsboro; Bellevue Hosp. Med. Coll., 1898	1897	1904
Steel, Wm. C., Mt. Olive; Univ. of Md., 1891	1891	1894
Strosnider, Charles F., Goldsboro; Univ. of Md., 1909	1910	1913
Sutton, Wm. G., Seven Springs; Jeff. Med. Coll., 1889	1889	1896
Warrick, L. A., Goldsboro	.....	1924
Wilkins, J. W., Mt. Olive; Med. Coll. of Va., 1913	1913	1917
Woodard, A. G., Goldsboro; Univ. of N. C., 1907	1907	1909

WILKES COUNTY SOCIETY

President: J. M. Turner, N. Wilkesboro; Univ. of Louisville, 1881	1885	1896
Secretary: Frank H. Gilreath, N. Wilkesboro; Univ. of Nashville, 1898	1898	1898
Duncan, Julian E., N. Wilkesboro; Univ. Coll. of Med., Richmond, 1907	1907	1908
Eller, Albert J., Readybranch; P. and S., Balt., 1893	1895	1898
Hubbard, Fred C., North Wilkesboro; Jeff. Med. Coll., 1918	1919	1924
Hutchins, E. M., N. Wilkesboro; N. C. Med. Coll., Charlotte,, 1896	1896	1904
Sink, C. S., North Wilkesboro; N. C. Med. Coll., 1912	1912	1913
Somers, L. P., New Castle; Univ. of Md., 1897	1889	1904
Triplett, W. R., Purlear; N. C. Med. Coll., 1914	1915	1920
White, John W., Wilkesboro, (Hon.); Jeff. Med. Coll., Phila., 1889	1889	1890

WILSON COUNTY SOCIETY

President: Benj. S. Herring, Wilson; Univ. of Mich., 1900	1901	1901
Secretary: G. E. Bell, Wilson; Jeff. Med., 1921	1921	1922
Anderson, Wade H., Wilson; Univ. of Va., 1902	1904	1904

Name and Address	*Licensed*	*Joined State Society*
Anderson, Wm. S., Wilson; Wash, Univ., Balt., 1868	1885	1900
Barnes, Benjamin F., Elm City; Univ. of Md., 1902	1902	1902
Best, Henry B., Wilson; Univ. of N. C., 1907	1907	1908
Blackshear, T. J., Wilson; Emory Univ., 1914	1923	1924
Bradshaw, T. G., Wilson; Med. Coll. of Va., 1909	.....	1924
Brooks, G. M., Elm City; Jeff. Med. Coll., 1918	1919	1919
Eagles, Charles S., Saratoga; Univ. of N. C., 1909	1909	1910
Grady, Leland V., Wilson, Rt. 2; N. C. Med. Coll., 1913	1913	1914
Hackney, Ben H., Lucama; Tulane Univ., 1911	1911	1913
Hoover, H. R., Black Creek; Balt. Med. Coll., 1891	1892	1904
Lamm, Isaac W., Lucama; Univ. Coll. of Med., Va., 1899	1899	1900
Lane, P. P., Wilson; Univ. of Md., 1908	1908	1920
Lewis, Geo. W., Wilson; Univ. of Md., 1886	1885	1894
McClees, E. C., Elm City; Med. Coll. of Va., 1917	1920	1920
Mitchell, Geo. W., Wilson; Univ. Coll. of Md., Richmond, 1913	1913	1920
Moore, Chas. E., Wilson, (Hon.); Bellevue Hosp. Med. Coll., 1875	1875	1875
Moore, Edwin G., Elm City, (Hon.); Univ. of Md., 1883	1883	1890
Moore, K. C., Wilson; Univ. of Mich., 1909	1909	1910
Person, T. E., Stantonsburg; N. C. Med. Coll., 1911	1911	1914
Powell, H. H., Stantonsburg; Med. Coll. of Va., 1911	1911	1914
Putney, R. H., Elm City; Med. Coll. of Va., 1914	1914	1920
Saliba, Micheal M., Wilson; Balt. Med. Coll., 1897	1910	1910
Smith, A. Jones, Black Creek; Univ. of Pa., 1921	1921	1923
Smith, L. J., Wilson; Jeff. Med. Coll., 1912	1917	1918
Strickland, Ernest L., Wilson; Med. Coll. of Va., 1916	1916	1917
Williams, Albert F., Wilson; Univ. of Md., 1901	1901	1904
Willis, H. C., Wilson	.....	1924
Woodard, C. A., Wilson; Univ. of Va., 1904	1904	1920

YADKIN COUNTY SOCIETY

President:	.....	.....
Secretary:	.....	.....
Couch, V. F., Yadkinville; Columbia Univ., 1910	1910	1919
Leak, Wharton G., East Bend; N. C. Med. Coll., 1900	1899	1904

YANCEY COUNTY SOCIETY

President:	.....	.....
Secretary:	.....	.....
Peep, W. A., Ramsaytown	1906	1919

INDEX

A

PAGE

Abernathy, Dr. C. O. 183

A Brief Study of the Records of the Recruiting Office at Fort Bragg, N. C. —*T. H. McAndrews, Lt. Col. M. C., U. S. A.* 392

Acute Exudative Middle Ear Catarrh—*Milton R. Gibson, M. D.* 427

Discussion by—

Dr. O. P. Schaub 432

Maj. W. F. Von Zelinski 432

Dr. Gibson 433

Adams, Dr. F. D. 312, 323, 325

Adams, Dr. M. R. 368

Adams-Stokes Syndrome Epileptiform Convulsion Due to Heart Block—*J. P. Munroe, M. D.* 321

Discussion by—

Dr. F. D. Adams 323

Dr. S. A. Stevens 324

Dr. J. P. Munroe 324

Address—*Royal S. Copeland, U. S. Senator* 42

Address Before the Executive Committee of the Board of Regents, Etc.—*John Wesley Long, M. D.* 480

Allan, Dr. William 230, 248, 250, 460

Allen, Dr. C. I. 158

Alphabetical List of Members of Medical Society with Postoffice Address 499

American College of Surgeons, The—An Educational Movement—*C. S. Woods, M. D.* 492

Anderson, Dr. 10, 12, 17, 18, 85, 334

Annual Report of the Secretary of N. C. State Board of Health 51

Discussion by—

Dr. W. M. Stone 56

Dr. G. T. Sikes 56

Dr. Wm. L. Dunn 56

Dr. S. A. Stevens 57

Dr. H. B. Weaver 57

Dr. John A. Ferrell 57

Dr. Wm. J. McAnally 58

Dr. Chas. F. Strosnider 59

Mr. Browne 60

Dr. Dunn 61

Mr. Browne 61

Dr. Cyrus Thompson 61

Annual Report of the Sec.-Treas. of the Medical Society of N. C. 88

A Plea for a More General Study of the Fundamental Principles of These Sciences by the Members of the Medical Profession—*Frederick R. Taylor, B. S., M. D.* 241

Arsenical Poisoning from Neo-Arsphenamin, with Case Report—*J. F. Nash, M. D.* 235

PAGE

Discussion by—
Dr. Frederick R. Taylor 236
Dr. Geddie 237
Dr. Nash 237
Asbury, Dr. Francis E. 63
Ashby, Dr. 172, 175
Ashworth, Dr. 237, 241, 247
A Study on the Etiology of Pernicious Anemia—*Edward J. Wood, B. Sc., M. D., D. T. M. (Eng.)* 325
Discussion by—
Dr. Anderson 334
Dr. H. L. Brockmann 334
Dr. F. D. Adams 335
Dr. Thomas M. Green 335
Dr. G. B. Crowell 336
Dr. D. H. Nisbet 336
Dr. Wood 337
Attention, Medical Men!—*H. D. Stewart, M. D.* 361
Discussion by—
Dr. C. M. Strong 366
Dr. J. T. J. Battle 366
Dr. S. A. Stephens 367
Dr. H. D. Stewart 367
Attmore, Dr. Geo. Sitgreaves 64

B

Baker, Dr. H. M. 344, 345, 352
Baker, Dr. J. M. 72
Barron, Dr. A. A. 250, 256, 260
Bass, Dr. H. H. 175, 185
Bass, Dr. Spencer P. 276, 280, 294
Battle, Dr. I. P. 231, 256
Battle, Dr. J. T. J. 75, 366
Beath, Dr. Thomas 65
Beers, Dr. Charles 65
Blood Transfusion in Malnutrition in Infancy, Report of Forty Cases—*Albert Smedes Root, M. D.* 284
Discussion by—
Dr. G. H. Macon 293
Dr. H. H. Harrison 294
Dr. Spenser P. Bass 294
Dr. A. S. Root 295
Boddie, Dr. N. P. 231, 246
Bonner, Dr. H. M. 12
Bonner, Dr. K. P. B. 12, 83, 97
Bost, Dr. T. C. 151, 161
Bowley, Dr. A. J. 107, 109, 110, 112
Bowman, Dr. R. L. 75
Brenizer, Dr. Addison G. 123, 208

PAGE
Brewer, Dr. J. S. 252, 256
Brockmann, Dr. H. L. 219, 334, 344, 353
Brooks, Dr. B. U. 269
Browne, Dr. 60, 61
Burrus, Dr. J. T. 359, 486
Business Session 434
Butler, Dr. Leroy J. 191, 203, 273, 283

C

Calloway, Dr. Arthur W. 66
Cerebro-Spinal Meningitis, Report of Case—*R. A. Herring, M. D.* 302
Discussion by—
Dr. J. B. Sidbury 305
Clothing from the Pediatric Standpoint—*Lewis W. Elias, M. D.* 280
Discussion by—
Dr. Leroy J. Butler 283
Dr. W. C. Vedery 283
Dr. Elias 283
Cole, Dr. W. F. 475, 487, 490
Coltrane, Dr. W. E. 301
Committee on Public Policy and Legislation 95
Committee on Publication 101
Conjoint Sessions of The Medical Society of The State North Carolina and the North Carolina Board of Health 51
Conservative Treatment of Intestinal Obstruction, The—*Albert W. James, A. B., M. D.* 156
Discussion by—
Dr. C. I. Allen 158
Dr. R. L. Gibbon 159
Dr. C. S. Norburn 159
Dr. B. C. Willis 160
Dr. Oren Moore 160
Dr. R. McBrayer 160
Dr. James 160
Dr. Bost 161
Conservatism in Ovarian Surgery, with Report of One Hundred Cases—*Robert T. Ferguson, M. D., F. A. C. S.* 450
Discussion by—
Dr. Oren Moore 453
Copeland, Senator Royal S. 42
Coppridge, Dr. W. M. 149
Corbett, Dr. L. W. 391
Councilors 101
Crouch, Dr. A. McR. 202
Crowell, Dr. G. B. 147, 336
Crowell, Dr. L. A. 80, 167, 224, 344, 475
Culbreth, Hon. Eugene E. 10

D

PAGE

Daniels, Dr. O. C. 406

Diagnosis and Post-Operative Treatment of Perforated Gastric and Duodenal Ulcer, The—*T. E. Wilkerson, B. S., M. D.* 220

Discussion by—

Dr. L. A. Crowell 224

Dr. R. McBrayer 225

Dr. R. L. Pittman 225

Dr. Nisbet 225

Dr. Sparrow 226

Dr. Phillips 226

Dr. Wilkerson 227

Diagnosis of a Foreign Body in a Bronchus, The—*Edward W. Schoenheit, M. D.* 306

Discussion by—

Dr. C. C. Phillips 309

Dickinson, Dr. E. T. 488

Diseases of the Colon—Diagnosis—*H. L. Brockmann, M. D.* 353

Discussion by—

Dr. J. T. Burrus 359

Dr. C. C. Phillips 360

Dr. D. Heath Nisbet 360

Disturbed Carbohydrate Metabolism of Pregnancy—*Brodie C. Nalle, M. A., M. D., F. A. C. S.* 456

Discussion by—

Dr. William Allan 460

Dr. I. M. Procter 460

Dr. H. D. Stewart 461

Dr. Nalle 462

Dunn, Dr. Wm. Leroy 56, 61, 69, 111, 116

E

Ehringhouse, Hon. J. C. B. 34

Elias, Dr. Lewis W. 280, 283

Empyema of the Pericardium—*M. R. Adams, M. D.* 368

Establishment of a Standard in Protein Sensitization, The—*Horace Mitchell Baker, B. S., M. D.* 345

Discussion by—

Dr. Paul F. Whitaker 352

Dr. D. Heath Nisbet 352

Dr. Baker 352

Etiology of Habit Disease, The—*W. C. Ashworth, M. D.* 237

Discussion by—

Dr. George W. Mitchell 240

Dr. Ashworth 241

Examination in Anatomy and Embryology—*L. A. Crowell, M. D.* 80

Examination in Chemistry, Hygiene and Physiology—*W. M. Jones, M. D.* 80

Examination in Histology, Bacteriology and Pathology—*C. A. Shore, M. D.* 81

PAGE

Examination in Pharmacology, Materia Medica and Therapeutics—*J. G. Murphy, M. D.* 82
Examination on Practice of Medicine—*W. P. Holt, M. D.* 82
Examination in Obstetrics, Gynecology and Pediatrics—*K. P. B. Bonner, M. D.* 83
Examination in Surgery—*L. N. Glenn, M. D.* 81

F

Fai on, Dr. I. W. 92, 299, 319
Ferguson, Dr. Robt. T. 148, 443, 450
Ferrell, Dr. John A. 57, 390
Financial Statement, 1923-1924 90
Fox, Dr. Thomas Israel 66
Function of Base Hospitals in War, The—*C. S. Lawrence, M. D.* 128

G

Gastric and Duodenal Ulcer from the Medical Viewpoint—*D. Heath Nisbet, M. D.* 204
Gastric and Duodenal Ulcers from a Surgical Point of View—*Addison G. Brenizer, M. D.* 208
Geddie, Dr. K. B. 232, 237
Gibbon, Dr. R. L. 133, 159, 201, 434, 444
Gibson, Dr. Milton R. 415, 427, 433
Glenn, Dr. Eugene Byron 67
Glenn, Dr. L. N. 81
Glucose Tolerance—*William Allan, M. D.* 248
Discussion by—
Dr. A. A. Barron 250
Dr. Allan 250
Graham, Dr. George Washington 69
Green, Dr. Joseph B. 405
Green, Dr. Thomas M. 200, 335, 453, 455
Griffith, Dr. F. Webb 147, 435
Gynecological Tinkering—*F. Webb Griffith, A. M., M. D.* 435

H

Hall, Dr. James K. 29
Hamilton, Dr. W. McKay 295
Hardee, Dr. P. R. 404
Hardee, Dr. W. P. 408, 412
Hargrove, Dr. W. F. 70, 378, 386
Harrison, Dr. H. H. 279, 294
Health and Good Citizenship—*Rev. Lee McB. White* 375
Discussion by—
Dr. W. F. Hargrove 378
Henderson, Dr. T. B. 406
Herring, Dr. Needham B. 70
Herring, Dr. R. A. 302

PAGE
Hicks, Dr. Wm. N. 70
High Rejection Rate for North Carolina Boys as Seen at Fort Bragg—*General A. J. Bowley, Commander* 107
Discussion by—
Gen. A. J. Bowley 109
Dr. J. Howell Way 109
Gen. Bowley 110
Dr. J. H. Way 110
Dr. Wm. Leroy Dunn 111
Dr. J. H. Way 111
Gen. Bowley 112
Highsmith, Dr. J. D. 139, 167
Highsmith, Dr. Seavy 17, 148
Hilton, Dr. Julius J. 71
History of the Junior Candidate Group—*H. W. McKay, M. D.* 475
Horseshoe Kidney—Report of a Case—*H. M. Vann, M. D.; Charles Phillips, M. D.* 186
Hospital Unit "O" and Base Hospital No. 6, A. E. F.—*Addison G. Brenizer, M. D.* 123
Hubbard, Dr. C. C. 63, 66

I

Importance of History and Symptoms in Early Diagnosis of Tuberculosis—*J. L. Spruill, M. D.* 372
Discussion by—
Dr. J. H. Williams 374
Infections of the Urinary Tract (Pyelitis) in Infancy and Childhood—*Hamilton W. McKay, M. D.* 295
Discussion by—
Dr. J. B. Sidbury 299
Dr. I. W. Faison 299
Dr. J. E. Kerr 300
Dr. W. E. Coltrane 301
Dr. W. C. Vedery 301
Dr. McKay 301
Inguinal Hernia—*D. T. Tayloe, Jr., M. D.* 133
Discussion by—
Dr. Foy Roberson 138
Dr. J. W. Tankersley 139
In Memoriam 63
Dr. Francis Emory Asbury 63
Dr. George Sitgreaves Attmore 64
Dr. Thomas Beath 65
Dr. Charles Beers 65
Dr. Arthur W. Calloway 66
Dr. Thomas Israel Fox 66
Dr. Eugene Byron Glenn 67
Dr. George Washington Graham 69
Dr. Robert H. Hargrove 70

PAGE
Dr. Needham B. Herring 70
Dr. William N. Hicks 70
Dr. Julius J. Hilton 71
Dr. Evander McNair McIver 71
Dr. Elijah Brodie Meadows 71
Dr. Benjamin H. Palmer 71
Dr. James Jones Philips 72
Dr. Albert A. Phipps 74
Dr. Henry L. Pittman 74
Dr. James M. Reece 74
Dr. James R. Sterritt 74
Dr. J. K. Stockard 75
Dr. John Alexander Williams 75
Invocation—*Rev W. A. Stanbury* 9
Dr. Anderson 10
Is There Such a Thing as Maternal Impression?—*Oren Moore, M. D.* 462
Discussion by—
Dr. H. D. Stewart 464

J

James, Dr. Albert W. 156, 160, 266
Jones, Major Glenn I. 117
Jones, Dr. W. M. 80

K

Kerr, Dr. J. E. 300
Koonce, Dr. S. E. 419

L

Lafferty, Dr. R. H. 217
Lapham, Dr. Mary 310, 319
Laughinghouse, Dr. O'H. 86
Lawrence, Dr. Benj. J. 86, 130, 133, 171, 174, 175, 185
Lawrence, Dr. C. S. 128, 489
Legal Aspect of Medical Defectives, The—*Hon. J. C. B. Ehringhouse* 34
Discussion by—
Dr. J. V. McGougan 41
Dr. L. B. McBrayer 41
Lienbach, Dr. Robt. F. 320
Lilly, Dr. James M. 420
Long, Dr. John W. 474, 475, 480, 489
Lowery, Dr. John R. 419, 421

M

Macon, Dr. G. H. 251, 293
MacConnell, Dr. John Wilson 400, 408, 412
Mann, Dr. I. Thurman 113, 117

PAGE
Manning, Dr. I. H. 383
Martin, Dr. Moir S. 172
McAnally, Dr. Wm. J. 58
McAndrews, Lt. Col. T. H. 392
McBrayer, Dr. L. B. 41, 84, 160, 166, 225
McBrayer, Dr. R. 166
McCreary, Dr. A. B. 231
McGeachy, Dr. Robert S. 370
McGougan, Dr. J. V. 19, 41, 63, 83, 84, 85, 88
McIver, Dr. Evander McNair 71
McKay, Dr. H. W. 295, 301, 475
McNeill, Dr. J. W. 396
McRae, Dr. J. D. 165, 446, 449
Meadows, Dr. Elijah Brodie 71
Medical Aspect of Mental Defectives, The—*James K. Hall, M. D.* 29
Medical and Dietetic Treatment of Congenital Hypertrophic Pyloric Stenosis, The—*J. Buren Sidbury, M. D.* 193
Medical Reserve Corps from a National Viewpoint, The—*Major Glenn I. Jones* 117
Minutes of The House of Delegates 87
Mitchell, Dr. George W. 240
Moore, Dr. Oren 160, 443, 453, 462
Mosher-Toti Operation on the Lacrymal Sac (Combined Intranasal and External Operation), The—*Harry C. Willis, M. D.* 423
Discussion by—
Maj. W. F. Von Zelinski 426
Dr. Willis 427
Munroe, Dr. J. P. 321, 324
Murphy, Dr. Douglas P. 444
Murphy, Dr. J. G. 82, 417, 422

N

Nalle, Dr. 455, 456, 462
Nash, Dr. J. F. 235, 237
Neal, Dr. K. P. 147
Nisbet, Dr. D. Heath 204, 225, 320, 336, 344, 352, 360, 420
Nominating Committee 96
Norburn, Dr. C. S. 159, 212
North Carolina State Section of The American College of Surgeons 468

O

Observations Eye and Throat Conditions in Leprosy—*W. P. Hardee, M. D.* 408
Discussion by—
Dr. MacConnell 412
Dr. C. M. Peeler 412
Dr. H. L. Sloan 412
Dr. Hardee 412
Occurrence of Molds in the Sputum, The—*Mary E. Lapham, M. D.* 310
Of What Benefit are the Activities of the College to the Profession at Large? —*J. T. Burrus, M. D., F. A. C. S.* 486

PAGE
Officers of 1924-1925 101
Old Age—*J. W. McNeill, M. D.* 396
Opening Exercises 9
Operative Treatment of Congenital Pyloric-Stenosis—*R. L. Pittman, M. D.* 196
Discussion by—
Dr. Thomas M. Green 200
Dr. R. L. Gibbon 201
Dr. A. McR. Crouch 202
Dr. Butler 203
Dr. Sidbury 203
Dr. Pittman 203
Our Relationship to the Disabled Ex-Service Men of the State—*I. Thurman Mann, M. D.* 113
Discussion by—
Dr. Wm. Leroy Dunn 116
Dr. J. Howell Way 116
Dr. I. Thurman Mann 117

P

Palmer, Dr. Benj. H. 71
Pediatric Possibilities in North Carolina—*Baird U. Brooks, M. D.* 269
Peeler, Dr. C. M. 405, 412, 416, 420
Phillips, Dr. Chas. C. 182, 186, 217, 226, 309, 360
Philips, Dr. James Jones 72
Phipps, Dr. Albert A. 74
Pittman, Dr. R. L. 74, 196, 203, 225
Place of Meeting 1925—Pinehurst 102
Practical Application of Polyglandular Therapy in Women, The—*J. S. Brewer, M. D.* 252
Dr. A. A. Barron 256
Dr. D. W. Holt 256
Dr. Brewer 256
Preparation, Treatment and After Treatment of Tonsils, Etc.—*L. L. Simmons, M. D.* 401
Discussion by—
Dr. P. R. Hardee 404
Dr. C. N. Peeler 405
Dr. Joseph B. Green 405
Dr. T. B. Henderson 406
Dr. O. C. Daniels 406
Dr. A. M. Whisnant 408
Dr. John W. MacConnell 408
Dr. Simmons 408
Present Status of the Experiment in Post-Graduate Medical Teaching in North Carolina, The—*I. H. Manning, M. D.* 383
Discussion by—
Mr. Snell 385
Dr. W. F. Hargrove 386
President's Address—*J. V. McGougan, M. D.* 19

PAGE

President's Message—*J. V. McGougan, M. D.* 88
Procter, Dr. I. M. 181, 449, 455, 460
Program General Sessions 1
Program of the Sectional Meetings of the College—*W. F. Cole, M. D., F. A. C. S.* 487
Discussion by—
Dr. E. T. Dickinson 488
Dr. C. S. Lawrence 489
Dr. Long 489
Dr. C. S. Woods 490
Dr. Cole 490
Dr. C. S. Woods 491

R

Rabies in North Carolina and Its Prevention—*C. A. Shore, M. D.* 386
Discussion by—
Dr. C. A. Shore 390
Dr. John A. Ferrell 390
Dr. Shore 390
Dr. L. W. Corbett 391
Dr. Shore 391
Rainey, Dr. W. T. 229, 232, 246
Reece, Dr. Albert S. 74
Register, Dr. Frank M. 65
Relation of History to Other Factors in Present-Day Diagnosis,The—*F. Dennette Adams, M. D.* 312
Discussion by—
Dr. Mary Lapham 319
Dr. I. W. Faison 319
Dr. H. L. Brockmann 319
Dr. E. J. Wood 320
Dr. Robt. F. Leinbach 320
Dr. J. H. Williams 320
Dr. D. Heath Nisbet 320
Report of an Unusual Case of Ectopic Pregnancy—*Moir S. Martin, M. D.; Edward C. Ashby, M. D.* 172
Discussion by—
Dr. Benj. J. Lawrence 174
Dr. T. E. Wilkerson 175
Dr. Lawrence 175
Dr. Ashby 175
Report of the Board of Medical Examiners of the State of North Carolina 76
Report of Committee On Obituaries 63
Dr. J. V. McGougan 63
Dr. C. C. Hubbard 63
Dr. Frank M. Register 65
Dr. C. C. Hubbard 66
Dr. F. L. Siler 67
Dr. W. L. Dunn 69

PAGE
Dr. Julian M. Baker 72
Dr. R. L. Bowman 74
Dr. J. T. J. Battle 75
Report of the Committee to Consider the Four-Year Medical School—*I. W. Faison, M. D.* 92
Report of Committee on Automobile Insurance 95
Report of Committee on Publication 95
Report of Committee on Public Health Administration 102
Report of Committee on Public Policy and Legislation—*Dr. K. P. B. Bonner* 97
Report of Council 98
Reports of Councilors 99
Report of Delegates to American Medical Association 95
Report of Nominating Committee 101
Response to Addresses of Welcome 17
Discussion by—
Dr. Seavy Highsmith 17
Dr. Anderson 18
Retrograde Dilatation of Esophageal Strictures—*J. G. Murphy, M. D.* 417
Discussion by—
Dr. John R. Lowery 419
Dr. S. E. Koonce 419
Dr. D. H. Nisbet 420
Dr. C. N. Peeler 420
Dr. James M. Lilly 420
Dr. John R. Lowery 421
Dr. John B. Wright 421
Dr. Murphy 422
Right Angle Position of the Upper Arm or Shoulder Joint Following Radical Amputation of the Breast, The—*B. J. Lawrence, M. D.* 130
Discussion by—
Dr. R. L. Gibbons 133
Dr. Lawrence 133
Roberson, Dr. Foy 138
Root, Dr. Albert S. 275, 284, 295
Roster of Members for 1924, by Counties 516
Rural Malaria Control—*L. L. Williams, Jr., Surgeon* 378
Dr. H. A. Taylor 382

S

Sacro-Iliac Disease—*Hugh A. Thompson, M. D.* 168
Discussion by—
Dr. Wm. Scruggs 170
Dr. T. E. Wilkerson 171
Dr. Benj. J. Lawrence 171
Dr. Thompson 171
Schaub, Dr. O. P. 413, 417, 432
Schoenheit, Dr. Edward W. 306
Scruggs, Dr. W. Marvin 161, 167, 170
Section on Chemistry, Materia Medica and Therapeutics 229

PAGE

Section on Eye, Ear, Nose and Throat—Chairman's Address—*John Wilson MacConnell, M. D.* 400
Section on Gynecology and Obstetrics—Chairman's Address—*F. Webb Griffith, A. M., M. D.* 435
Section Meetings 3
Section of North Carolina Medical Veterans and Medical Officers Reserve Corps, U. S. A. 107
Section on Pediatrics 269
Section on Practice of Medicine 306
Section on Public Health and Education—Chairman's Address—*Robert S. McGeachy, M. D.* 370
Section on Surgery—Chairman's Address—*B. J. Lawrence, M. D.* 130
Scientific Papers 105
Shame of Modern Medicine, Etc., The—*Frederick R. Taylor, B. S., M. D.* 241
Discussion by—
Dr. W. T. Rainey 246
Dr. N. P. Boddie 246
Dr. W. C. Ashworth 247
Dr. F. R. Taylor 247
Shore, Dr. C. A. 81, 386, 390, 391
Sidbury, Dr. J. B. 193, 203, 278, 299, 305
Sikes, Dr. G. T. 56
Siler, Dr. F. L. 67
Simmons, Dr. L. L. 401, 408
Sims, Hon. R. N. 12
Sir Walter Hotel, Raleigh, April 15, 1924 471
Dr. Long 474
Dr. L. A. Crowell 475
Dr. Long 475
Dr. W. F. Cole 475
Sloan, Dr. H. L. 412
Snell, Mr. 385
Some Complications Following Operation for Acute Mastoiditis—*O. P. Schaub, M. D.* 413
Discussion by—
Dr. M. R. Gibson 415
Dr. C. N. Peeler 416
Maj. W. F. Von Zelinski 416
Dr. Schaub 417
Some Recent Thoughts on the Pathology and Treatment of Cancer—*H. H. Bass, M. D.* 175
Discussion by—
Dr. Ivan Procter 181
Dr. J. M. Templeton 182
Dr. Chas. Phillips 182
Dr. C. O. Abernathy 183
Dr. Cyrus Thompson 183
Dr. Templeton 184
Dr. Benj. J. Lawrence 185

PAGE
Dr. Bass 185
Some Salient Points in Digitalis Therapy—*W. T. Rainey, M. D.* 229
Discussion by—
Dr. Wm. Allan 230
Dr. F. R. Taylor 230
Dr. N. P. Boddie 231
Dr. I. P. Battle 231
Dr. A. B. McCreary 231
Dr. Rainey 232
Sparrow, Dr. 226
Spruill, Dr. J. L. 372
Stanbury, Rev. W. A. 9
Sterritt, Dr. James R. 74
Stevens, Dr. S. A. 57, 324, 367
Stewart, Dr. H. D. 361, 367, 461, 464
Stockard, Dr. J. K. 75
Stone, Dr. W. M. 56
Street, Dr. Claude A. 337, 345
Strong, Dr. C. M. 366, 443
Strosnider, Dr. Chas. F. 59
Sub-Lethal or Stimulating Dose of Radium, The—*Will D. James, M. D.* 266
Surgery of Gastric and Duodenal Ulcers—*Charles S. Norburn, M. D.* 212
Surgery of Mesenteric Injuries with Reference to Intestinal Viability Based on Clinical and Experimental Evidence—*T. C. Bost, M. D.* 151
Symposium on Congenital Pyloric Stenosis and Gastric and Duodenal Ulcer 191
Symptoms and Diagnosis of Congenital Pyloric Stenosis, The—*Leroy J. Butler, M. D.* 191
Symptoms and Pathology Produced by Slight Degrees of Renal Ptosis, The—*W. M. Coppridge, M. D.* 149

T

Tankersley, Dr. J. W. 139
Taylor, Dr. D. T., Jr. 133
Taylor, Dr. Frederick R. 230, 236, 241, 247, 345
Taylor, Dr. H. A. 382
Templeton, Dr. J. M. 182, 184
Thompson, Dr. Cyrus 61, 83, 84, 183
Thompson, Dr. Hugh A. 168, 171
Thursday, April 17, 11:00 A. M. 83
Discussion by—
Dr. J. V. McGougan 83
Dr. Cyrus Thompson 83
Dr. L. B. McBrayer 84
Dr. J. V. McGougan 84
Dr. Cyrus Thompson 84
Dr. J. V. McGougan 84
Dr. J. V. McGougan 85
Dr. Anderson 85
Dr. Chas. O'H. Laughinghouse 86

PAGE

Dr. Benj. J. Lawrence 86

Thyroid, The—*W. Marvin Scruggs, B. S., M. D., F. A. C. S.* 161

Discussion by—

Dr. J. D. McRae 165

Dr. R. McBrayer 166

Dr. L. A. Crowell 167

Dr. J. D. Highsmith 167

Dr. Scruggs 167

Transsacral Anesthesia Associated with Caudal Block in Gynecology and Obstetrics—*Thomas M. Green, M. D.* 453

Discussion by—

Dr. B. C. Nalle 455

Dr. I. M. Procter 455

Dr. Green 455

Transactions of the Seventy-First Annual Session 9

Treatment of Hypertension and Associated Conditions, The—*I. P. Battle, M. D.* 256

Discussion by—

Dr. A. A. Barron 260

Tuesday, April 15, 1924, 8:00 P. M. 29

U

Ureteral Obstruction—*J. D. Highsmith, M. D.* 139

Discussion by—

Dr. B. C. Willis 145

Dr. F. Webb Griffith 147

Dr. Gordon Crowell 147

Dr. K. P. Neal 147

Dr. R. T. Ferguson 148

Dr. Highsmith 148

Use and Abuse of Alcohol in Practice, The—*G. H. Macon, M. D.* 251

Use of Insulin in Diabetes, The—*Claude A. Street, M. D.* 337

Discussion by—

Dr. D. Heath Nisbet 344

Dr. H. L. Brockmann 344

Dr. H. M. Baker 344

Dr. L. A. Crowell 344

Dr. F. R. Taylor 345

Dr. Street 345

Use of Mercury in the Treatment of Syphilis, The—*K. B. Geddie, M. D.* 232

Use of Radium and X-ray in Gynecology, The—*John D. MacRae, M. D.* 446

Discussion by—

Dr. Chas. Phillips 449

Dr. MacRae 449

Use of Serum from Convalescent Measles Patients—*Spencer P. Bass, M. D.* 276

Discussion by—

Dr. W. C. Vedery 277

Dr. J. B. Sidbury 278

PAGE
Dr. H. H. Harrison 279
Dr. Bass 280
Use of Whole Lactic Acid Milk in Feeding Underweight Children Under One Year of Age—*Leroy J. Butler, M. D.* 273
Discussion by—
Dr. A. S. Root 275
Uterine Prolapse—*R. L. Gibbon, M. D.* 438
Discussion by—
Dr. R. T. Ferguson 443
Dr. Oren Moore 443
Dr. C. M. Strong 443
Dr. Gibbon 444
Uterine Radium Therapy—*Douglas P. Murphy, M. D.* 444

V

Value of the Cystoscope in Treating Obstinate Cases, The—*Hamilton W. McKay, M. D.* 295
Vann, Dr. H. M. 186
Vegetative Nervous System in Relation to General Medicine, The—*A. A. Barron, M. D.* 260
Verdery, Dr. W. C. 277, 283, 301
Von Zelinski, Major W. F. 416, 426, 432

W

Way, Dr. J. Howell 109, 110, 111, 116
Weaver, Dr. H. B. 57
Wednesday, April 16, 2:00 P. M. 97
Welcome from the City of Raleigh—*Hon. R. N. Sims* 12
Dr. Anderson 17
Welcome from the Mayor—*Hon. Eugene E. Culbreth* 10
Dr. Anderson 12
Welcome from Wake County Medical Society—*H. M. Bonner, M. D.* 12
Dr. Anderson 12
Wilkerson, Dr. T. E. 171, 220, 227
Williams, Dr. J. H. 75, 374
Williams, Dr. L. L., Jr. 378
Willis, Dr. B. C. 145, 160, 423, 427
Whisnant, Dr. A. M. 408
Whitaker, Dr. Paul F. 352
White, Rev. Lee McB. 375
Woman's Auxiliary 466
Wood, Dr. Ed. J. 320, 325, 337
Woods, Dr. C. S. 490, 491, 492
Wright, Dr. John B. 421

X

X-ray Diagnosis of Gastric and Duodenal Ulcer—*C. C. Phillips, M. D.; R. H. Lafferty, M. D.* 217

TRANSACTIONS

OF THE

North Carolina Public Health Association

FOURTEENTH ANNUAL SESSION

RALEIGH, N. C.

MONDAY, APRIL 14, 1924

NORTH CAROLINA PUBLIC HEALTH ASSOCIATION

FOURTEENTH ANNUAL SESSION

RALEIGH, MONDAY, APRIL 14, 1924

OFFICERS, 1923-1924

Dr. C. W. Armstrong, Salisbury.....*President*
Dr. L. L. Williams, Mt. Airy.....*Vice-President*
Dr. F. M. Register, Raleigh.....*Secretary*

PROGRAM

APRIL 14, 9:30 A. M.

1. Call to order by the President.

2. Prayer—Rev. Chas. F. Hudson, D. D., Raleigh.

3. President's Annual Address: "More Restricted Program of Public Health Work in the Co-operative Counties." C. W. Armstrong, M. D., Salisbury.

4. Report of Secretary—F. M. Register, M. D., Raleigh.

5. Report of Special Committees.

6. Appointment of
   (a) Committee on President's Address.
   (b) Committee on Visitors and New Members.
   (c) Committee on Resolutions.
   (d) Other Committees.

7. Pasteurization as a Factor in Protecting our Milk Supplies—Thos. A. Mann, M. D., Jacksonville, Ill.

8. Dentistry as Related to Health—J. S. Spurgeon, D. D. S., Hillsboro.
   Discussion by Chas. S. Mangum, M. D., Chapel Hill.

9. Encouragements and Discouragements of the Maternity and Infancy Work in Granville County—J. A. Morris, M. D., Oxford.
   Discussion by F. R. Harris, M. D., Henderson.

10. The Value of Voluntary Organizations in Public Health Work—Katharine Myers, R. N., Raleigh.
    Discussion by W. A. McPhaul, M. D., Charlotte.

2:30 P. M.

1. Municipal Mosquito Control—J. H. Hamilton, M. D., Wilmington.
   Discussion by Floyd Johnson, M. D., Whiteville.

2. Observation of Health Work in New York City—Sidney Buchanan, M. D., Concord. Discussion by C. W. Armstrong, M. D., Salisbury.

3. Duties of the Health Department from the Standpoint of the Health Officer D. E. Ford, M. D., New Bern.
   Discussion by C. L. Outland, M. D., Greenville.

8:00 P. M.

1. Midwives—E. R. Hardin, M. D., Lumberton.
   Discussion by K. P. B. Bonner, M. D., Raleigh.

2. Address—John A. Ferrel, M. D., Director for the United States, International Health Board, The Rockefeller Foundation, New York City.

3. Adoption of Resolutions.

4. Election of Officers.

5. Adjournment.

TRANSACTIONS

OF THE

NORTH CAROLINA PUBLIC HEALTH ASSOCIATION

FOURTEENTH ANNUAL SESSION

MONDAY, APRIL 14, 10 A. M.

The meeting was called to order by the President, Dr. C. W. Armstrong, Salisbury.

Invocation by the Reverend Charles F. Hudson, D. D., Raleigh.

PRESIDENT'S ADDRESS

MORE RESTRICTED PROGRAM OF PUBLIC HEALTH WORK IN THE CO-OPERATIVE COUNTIES

C. W. Armstrong, M. D.
Health Officer Rowan County, Salisbury

It is my purpose to review briefly a few of the most outstanding accomplishments of the twenty-seven counties with full time health departments during the past year, with some comments as I go along on a few phases of this work. This past year has been one of real accomplishment in public health work and I think that the men who have done this work have cause to feel proud of their achievements. North Carolina today stands second to none in many lines of endeavor for the public welfare, and certainly by no means the least of these is her standing in public health work. The eyes of the nation are turned to North Carolina and watching her wonderful progress in the prevention of sickness and death. When the American Public Health Association recently started its survey of public health work in the United States it turned to North Carolina for help, or perhaps I should say for a man to do the work. Let us hope that Dr. Rankin's love for his native state and the organization he has perfected here will overcome any possible inclination to make his stay away from it more than purely temporary.

It is not necessary for me to review North Carolina's wonderful progress along public health lines. You are all probably familiar with its history. You will recall how it has grown from a ragged, unkempt, undernourished urchin into a strong and healthy adult. What a transformation there has been! And to the vision, resourcefulness and untiring efforts of Dr. Rankin this is in large measure

due. Dr. Haven Emerson, national figure in public health work, recently said to me: "Why do you come to New York City to study public health methods? You have the greatest organization in the country down there in North Carolina." Are you not proud to be a member of this splendid organization? I am. I am proud of my job. I am glad to be one of the men engaged in this splendid work our state is doing for the preservation of human lives.

Last year, under our system of relative values and cost equivalents, we turned in an immense amount of work. We gave to our people $1.53 worth of work for every dollar they spent. Yes, we have a splendid organization in the field, and nowhere can there be found a better organization to back us up and direct our efforts than our State Board of Health. However, there is another side of this question which I want to present. It seems to me that there is not offered to the individual health officer opportunities to develop his health department along the lines which conditions make necessary. That our general plan of public health work as carried on in the twenty-seven co-operating counties is too broad and takes in too many items of work, I think you will agree. Shall we restrict our work? Can it be done without causing a protest to be filed by the citizens of our respective counties? I am not attempting to answer the question definitely either in the affirmative or the negative, but I do think that some plan should be devised whereby the health officer, if he so desires, may restrict his work. By this I mean his real public health work, without sacrificing his standing as a health officer.

In the first place, what is the function of a health department? It is primarily to prevent or to lessen the general morbidity and mortality from the preventable diseases. We must realize, however, that public health work, despite the high standing of North Carolina, is really in its infancy in this state. Public health work in numerous localities is not looked upon as a necessity—I mean in localities where health departments exist. It should therefore be our aim to establish in the minds of our people a deep-rooted feeling that their health department is an absolute necessity. Suppose that in your county the board of county commissioners should suddenly announce their intention of discontinuing the health department. Would there be an immediate protest on the part of the people?—a demand by the majority of your citizens that the health department be continued? If so, you can say without fear of contradiction that that particular health officer is a good man, no matter whether he stands at the top or the bottom of the list under the present system of grading by cost equivalents and relative value. This particular man has a very high relative value. Let us make it our aim to make our departments of the most possible service to the greatest number of people. I have heard health officers bemoan the fact that they had trouble getting their contracts signed, trouble in various other ways. I have also heard the same health officers say they would refuse to go back to the office after hours for vaccinations or marriage examinations or some other smaller

item of work. Is it at all hard to understand why they may have trouble getting their contracts signed? That this practice of going hither and thither at the beck and call of the rabid populace is a nuisance I will admit, but for that matter so is the whole business of having to work at all. There are numerous things that we are called up to do which are not pleasant, which can by no stretch of the imagination be called public health work and which are the bane of the health officer's existence. They try his patience, put his religion to the acid test, make him grouch at the wife, slap the kids and vent his spleen upon the poor unfortunates who have to put up with his presence from day to day. But if we value our standing in the community, if we desire to have our health departments looked upon as a necessity, then let's not try to restrict this part of our program. Do these things and do them cheerfully, realizing that we are public servants, paid by the people, spending their money, and that the lowliest citizen of our county is entitled to take up our time, is entitled to courtesy and an earnest effort on our part to help, no matter what his problem may be. I know of an instance in one county where a health officer was unable to vaccinate against smallpox a man and his family. This health officer went on his own initiative and secured a threshing machine and crew to operate it and threshed out this man's peas, the man having been unable to secure help himself. He then vaccinated the whole family, not only for smallpox but for everything in the catalogue. So in advocating a more restricted program for our co-operating counties, I am not advocating less work or that a health officer set himself up as an individual who will refuse to touch anything outside of his regular line of work.

But what I am trying to get at is that we as health officers should be alive to the public health situation as it exists in our respective counties. How many of us here present, I would like to ask, could give now an intelligent resume of our public health situation? How many of us can say what public health work is really needed in our county? Keeping in mind at all times the one thing which justifies our existence, namely, the prevention of sickness and death, then what shall our program be? Are you still concentrating on typhoid fever when the typhoid death rate has declined to a point where this particular disease is no longer a problem, while tuberculosis, diphtheria, and the mortality among infants is keeping the death rate higher than that of your neighboring county which has no health department? The death rate from typhoid fever in North Carolina has decreased from 22.2 in 1918 to 11.2 in 1922, nearly half, while the death rate from diphtheria during the same period has increased from 10.2 to 19.2, nearly double. What are you going to do about it? The people have been taught the value of typhoid vaccine and sanitation. Shall we continue to concentrate on typhoid while diphtheria continues year by year to increase its toll of human lives? Let's see what we are doing about it in the twenty-seven co-operating counties. Last year (1923) in these twenty-seven counties we immunized against typhoid fever 41,845 people. During the same period these counties immunized against

diphtheria 14,163 people—about one-third of the number immunized against typhoid. Or perhaps I should say that we gave three doses of toxin-antitoxin to that number, which you are aware does not by any means immunize one hundred per cent. Does it not seem to you that it is time we stopped and made an intelligent survey of the situation in our respective counties? Is your county helping to contribute to the increased death rate from diphtheria while you concentrate on typhoid fever? Certainly I do not mean to advocate that we cease all typhoid work, but I do advocate that we bring our diphtheria work at least on a par with our typhoid work, since it is diphtheria that is doing the killing and not typhoid. Then, again, let us compare our state death rate from typhoid fever of 11.2 to 1922 with the death rate of 97.5 from tuberculosis during the same period, then contrast our total earning on the dollar invested in tuberculosis control and typhoid control. The grand total of cost equivalents or earnings on the dollar invested in twenty-seven counties this past year was $20,927.50 on typhoid fever, with a death rate of 11.2, against $3,585.75 on tuberculosis, with a death rate of 97.5. There were 41,045 people immunized against smallpox in these counties in 1923 and 14,163 against diphtheria. Compare the death rates from the two diseases. You know, of course, that the death rate from smallpox is negligible and that smallpox is really not a problem. Of course, it will be said that the reason the death rate from smallpox is so low is on account of the large number vaccinated every year. Certainly this is true, and it is also true that the high death rate from diphtheria is due to the small number immunized. Compare your death rate from diseases of infancy in North Carolina and from venereal diseases, and then compare the total amount of work done in these two items in the co-operating counties. Syphilis shows 127 deaths in 1922. Diarrhea and enteritis in children under two years old killed 1,390 in the same period, while we were turning in work to the value of $26,739.00 on venereal disease, and a total of $13,452.75 on our maternity and infancy program.

Does it not strike you that there is something radically wrong with this program? I am aware, of course, that each county health officer has his own individual problem, and one thing that may be vital in your county may be, on the other hand, relatively unimportant in my county. But the fact remains that the death rates from certain diseases are high, and the records show that we are neglecting these diseases and directing the major portion of our efforts towards other lines of work which shoot up our total earnings on the dollar but do not materially lessen the general death rate. I do not intend this as a criticism of any particular health officer, county or group of health officers, nor of the policies of the State Board of Health, except constructively. I realize that I am more guilty, probably, than all of you. Is this condition of affairs and this misdirection of efforts, if it be such, the fault of the local health officer, or could it be possible that our dear old friend, the cost equivalent system, is at fault? Does the fact that a man who has a rating of $1.75 on the dollar invested mean that this man

has done any more public health work than the fellow who barely turns in dollar for dollar? Would it not be possible for the $1.75 man to be a victim of circumstances? For instance, a good sized epidemic of measles, scarlet fever or diphtheria will shoot his total earning on the dollar invested way up. At the same time he will probably have a corresponding rise in the death rate, while on the other hand, the dollar man is having no epidemic, is decreasing the death rate and the total earning on the dollar invested remains low. Which is the better health officer? Certainly by all sane reasoning the dollar man is better, but according to the cost equivalent system the dollar man is held up to the state in the reports which are sent to our influential people as a relatively poor man.

I do not mean at all to disparage the work or the efforts of our men who stand high as far as the earning on the dollar invested is concerned. That they have worked and worked hard we shall all agree, but how much better it would be if these men who have worked so hard and stand so high had directed their efforts to the diseases which are killing our people. It may be that it is possible for us under the present system to restrict our work to the necessary things and at the same time to stand high in earnings on the dollar. This, however, I doubt. Then let there be devised some system whereby we may concentrate on the necessary phases of work and reduce the death rate. In spite of the fact that we, of course, get a higher proportion of cases reported and have probably a larger population in the counties with full time departments, we must, if we hope to justify our existence, in fact if we hope to exist at all as health officers, show a relatively lower death rate than counties with no department. Let us have some system of grading, surely. The spirit of friendly rivalry which the grading system creates stimulates us to our best efforts, but let us be graded on results. Let the man who reduces his death rate from the most outstanding causes of death be the man who leads in public health work and not the man who turns in the greatest earning on the dollar invested, with no reductions but probably an increase in his death rate. Let's do the vital things, the things that count and the things which save life. Let there be a stimulus for us to do this kind of work. Let's put a premium on the saving of lives.

REPORT OF SECRETARY

F. M. Register, M. D., Raleigh

The thirteenth annual session of this association was held in Asheville, Monday, April 16, 1923, and was opened with an address by our President, Dr. A. C. Bulla.

The following committees were appointed:

Committee on President's Address: Dr. R. L. Carlton, Dr. E. T. Hollingsworth, Dr. J. A. Morris.

Committee on Visitors and New Members: Dr. C. N. Sisk, Dr. P. C. Carter, Dr. L. L. Williams.

Committee on Resolutions: Dr. R. S. McGeachy, Dr. J. E. Smith, Dr. D. R. Perry.

The following resolution was introduced by Dr. C. V. Reynolds and was adopted:

"The plan for eradication of bovine tuberculosis in North Carolina was recently adopted by most of the states at the international meeting of Live Stock Associations at Chicago, Illinois. The work is conducted under the accredited area plan, by which is meant each county separately taking up tuberculosis eradication, co-operating with the state and federal departments, and all cattle within the said county are tested. After all tests are made, and all reacting cattle slaughtered, the said county as a whole becomes an accredited area.

At present the following counties are doing tuberculosis eradication under the accredited area plan in North Carolina, viz., Alamance, Buncombe, Cabarrus, Cumberland, Forsyth, Guilford, Greene, Iredell, Mecklenburg, Pender, Robeson, Rowan, Stanly, Stokes, Wayne, Harnett and Pitt. Nine other counties are ready to take up the work. Buncombe county within the course of two weeks will be completed.

At present there are over three hundred and fifty accredited or entitled to be accredited dairies, and upon the completion of the test all cattle within Buncombe county become accredited.

Therefore be it resolved, That the methods and efforts put forth by Dr. William Moore, state veterinarian, and Dr. Paul Vaughn, federal inspector in charge of the state of North Carolina, in the eradication of bovine tuberculosis, are indorsed by the North Carolina Public Health Association."

After some discussion, a motion introduced by Dr. L. J. Smith indorsing the action of town councils in passing ordinances requiring the immunization of dogs against rabies, thus preventing the spread of the disease was tabled.

The following officers were elected at the 1923 session:

President, Dr. C. W. Armstrong, Salisbury.
Vice-President, Dr. L. L. Williams, Mount Airy.
Secretary, Dr. F. M. Register, Raleigh.

The following committees were appointed by the President:

Committee on Visitors and New Members: Dr. W. A. McPhaul, Charlotte; Dr. E. T. Hollingsworth, Clinton; Dr. Floyd Johnson, Whiteville.

Committee on Resolutions: Dr. L. J. Smith, Wilson; Dr. R. G. Parker, Jackson; Dr. C. L. Outland, Greenville.

Dr. L. L. Williams, Vice-President, appointed the following as a committee on the President's address: Dr. R. S. McGeachy, Kinston; Dr. Sidney E. Buchanan, Concord; Dr. A. C. Bulla, Raleigh.

MATERNITY AND INFANCY WORK IN GRANVILLE COUNTY, ITS INSPIRATIONS AND DIFFICULTIES

"Our objective is to close up the highway of disease over which death moves toward us, while we move unhandicapped through years toward death inevitable by years."

J. A. Morris, M. D.

Director Granville County Health Department, Oxford

Dr. W. S. Rankin gave expression to the idea that perhaps health agencies, where well directed, were approaching an irreducible minimum of mortality unless there should be added emphasis to the Maternity and Infancy unit of health work.

Examining the vital statistics for Granville County gives corroborative testimony to the truth of his dictum as to this county.

The number of inhabitants in Granville County in round numbers is 27,000.

The total number deaths (1922) in this population	239
Death rate per 1,000 inhabitants	8.7
Still births	22
Total number births	700
Birth rate per 1,000 population	25.6
Number of deaths of children two years and under	57
Deaths of mothers from puerperal causes	9

Reviewing these figures, the general death rate for the county—8.7, is fairly low. Sixty-six of the total number of deaths occurred in the maternity and infancy population, which is only about 2,100, assuming that seven hundred births per year is an average for the two years, including both years of child life. Sixty-six deaths from a population of 2,100 is 31.4 per 1,000 population. Subtract these sixty-six deaths from the total number two hundred thirty-nine; this leaves one hundred seventy-three deaths occurring in a population of 27,000 less the 2,100 mothers and babies, which is 24,900. Now one hundred seventy-three deaths in a population of 24,900 gives a death rate of 6.9 per 1,000.

Contrast the 31.4 death rate befalling the mothers and babies with the 6.9 death rate befalling the other part of the population and there is strong constraint to work with these more hazardous periods and conditions of life.

The States' birth rate is 30.8, the birth rate of Granville is only 25.6, a difference of 5.2 per thousand against Granville County. Add this 5.2 per 1,000 as an increase to births out of 27,000 population and we would have 140 more babies; and then would only be keeping step with the State.

Death rates are made up mostly out of disease and accident. Birth rates are limited by disease and dread of disease and suffering.

It is common sense to apply strongest conserving force where waste is greatest. It isn't hard to see from the foregoing figures where this occurs. What must be the character of the conserving force to be applied?

Beginning with maternity, for here begins life, the very first thing to be done is to change the present psychology of this condition. It may be purely an assumption that the psychology referred to is an error and therefore ought to be corrected. It is an age-old sensibility, recorded in Luke 1:24, 25, that Elizabeth, the mother of John the Baptist, "conceived, and hid herself five months."

Without any vital statistics women know of the hazards of maternity, and they shun it by means fair and foul. It ought, then, to become a subject of intense study, and should be the object of wisest solicitude and genuine honor to make it attractive and desirable instead of repulsive and dreaded as is so common. Repulsiveness and dread are effects of operating causes. Some great social force set agoing, if it substitutes happy open welcome to pregnancy for the shame and dread prevailing, will do more good than all the obstetricians' best prescriptions, because it may release those moral and physical forces that might put maternity in a position to be easily studied from its inception.

It cannot be said that we in Granville are making much headway with this necessary element to success. Since the organization of the work only 49 prenatals have been registered. There have been 249 home visits and conferences; 8 urinalyses. In the infancy work there have been 374 babies registered, 8 health conferences in meeting places or centers, and 20 postnatal mothers with their babies attending, and one prenatal. With reasonable energy and tact the home conferences ought to be successful. They have been successful in direct ratio to the activity of the nurse. The health conference constitutes a different problem. For this to be successful in so short a time as Granville County has had the work needs that every physician should explain it to and urge the people to adopt the keep-well scheme as a substitute for the get-well one. The personnel of the Health Department alone should not be expected to revolutionize so ancient a custom as deferring the visit to the doctor to the time when sick.

There is an almost universal need to restudy the plan and course of life. One hundred and twenty years is the minimum duration of a human life in the purpose and plan of the Creator (Gen. 6:3). That this is rarely attained is no contradiction of the purpose and plan. Every life begins endowed with a definite sum total of vitality. It is a unity divided into periods only for the convenience of study. Its environment changes continually and suggests a body rapidly moving through a trajectory. The velocity of its prenatal evolution makes its environmental relation exceedingly interesting and important. It is so powerfully influenced in this period by its relation to physical and mental conditions of the mother that it is easy to confuse influences of environment with those of heredity. Heredity's work is finished in the union of the primordial cells. The contribution is once

made. Environment then makes myriads of contributions throughout life's whole duration. To direct these contributions is the task of health workers, and the task should begin with the beginning of life, lest the trajectory of life have too little initial elevation to move smoothly and far toward its one hundred and twenty years objective. If they wait until the postnatal period, they are likely to have problems so perplexing and intricate as to baffle them. The principle of not beginning with prenatal life is as medicine is practised. It is to wait for a trouble so accumulated as to be unmanageable. It loses prevention's opportunities and invites calamities. There may be little difficulty in showing that defeat is then inevitable, but deep in the discerning heart will be regret that the inevitable was not obviated by a timely effort of directing away from such an issue.

The plan of the work is to initiate the idea in maternal minds by a nurse. Prenatal motherhood in its present exclusiveness would generally repel any other approach to herself, and in the management of the postnatal life of her child would by a sort of telepathy welcome the nurse.

Granville County has no apportionment of funds made to it for this special work out of the Federal or Sheppard-Towner fund. Dr. K. P. B. Bonner sent one of the field agents of the Bureau of Maternity and Infancy to the county to direct the organization to the going point. The nurse was accompanied in her rounds by him after a survey of certain centers was made, and a census of the motherhood of these was taken. Health Conferences were organized to be taken charge of by one or more physicians. These physicians are appointed by a committee elected by the Granville County Medical Society out of its own membership. These have, every one of them, faithfully performed their part in the work of directing the Health Conferences.

The Health Conferences have not been as largely attended as desired. There are three parties interested in and in some measure responsible for whatever is the outcome of these: (1) The Health Department, (2) the medical profession and (3) the public.

Who is responsible for the shortcoming of the plan? What is the minimum net results which will justify the money, time and energy expenditure on the part of the Health Department and the unpaid physicians directing the Health Conferences? What does the public with its present thought habit value and desire to the point of action? Compass and answer these questions and you can help Granville County's Health Department Director.

He is willing to assume his share of responsibility for the meager results. He often thinks of the cheerful prospect in the mind of Dr. E. D. Andrews, the field agent who directed the organization of the work. In reply to some foreboding question as to the future of the work he said it was found in experience to be one of the easiest ideas to "sell" to the people. It is easy to sell; but like a certain patent churn which was once sold to a majority of the householders of Granville a very brief season after the sale they were all "scrapped." We seem unable to get them to use what we have sold them. It certainly is not that the maternity and infancy work idea is like the

churn, useless! But it certainly is a fact that after accepting the idea and commending it, they very slowly adopt it in action. It's as popular as prohibition, and like that measure seems more suited to the use of the other fellow.

In an issue of a popular health publication coming to the Granville Health Department was this very expressive phrase, "The insolence of Health." This exactly sets forth what the public mind is obsessed with. "I am well, ergo, I shall be well." "You have something good; carry it to Mrs. Blank." Mrs. Blank has the same psychology, and this psychology brakes the movement of the work.

The foregoing is not pessimism. We are not yellow. We do not surrender to difficulties. They are a part of the inspiration. We are trying to get an accurate measure of the task before us, to accept the challenge, and to adjust our activities to its social, psychic, and all other difficulties in the full faith that though the goal is not in sight except by faith, if the personnel of the Granville Health Department shall be faithfully pertinaceous in the work, our successors will not have to begin at the beginning.

DISCUSSION

Dr. W. A. McPhaul, Charlotte: I enjoyed Dr. Morris' paper very much. This paper is along the line of the President's address, that something must be done along the lines of infant and maternal welfare. Over in Charlotte, during 1923, we had 197 children under two years of age to die, and seven maternity cases, making a total of 204, nearly a third of all our deaths. The cause of this frightful slaughter of infants perhaps would not be the same in Granville County as in Mecklenburg County. In a study of the cause in Charlotte we come to the conclusion that venereal disease was perhaps the greatest cause among the colored population. In Charlotte we have what might be termed an economic cause. Many mothers are compelled to work for a living, and many of the houses are very crowded. One of our nurses found thirty-five people living in a seven room house. Some of them were pregnant women working every day. To bring down our death rate, something must be done to save the lives of babies.

Dr. R. S. McGeachy, Kinston: Dr. Morris and I were here together yesterday, and he was about to cry. I told him to wait fifty years and he would see the result of what he is doing now. We must not get discouraged because we do not see any results at present. The mothers of today grew up in insanitary conditions, and we can not hope for much from them. We have to begin with the babies of today to make the mothers of twenty-five or thirty years hence. If you can solve the problem in any other way, you can beat me. We have three as faithful nurses as I have ever seen—you can see from the reports how faithfully they work—and we have perhaps registered a larger number than in any other county, and yet we feel that we have accomplished little. We shall never live to see much of the results of our work—Morris and I shall not, although some of you younger men may. But we must start to make the children of today decent mothers of tomorrow and do the best we can with what we have now, which is very little, in my opinion. If we start teaching the children of today

how to raise their children, then the future generations will be better. Some factors, such as venereal diseases and the fact that the mothers of today are forced to work for a living, we can not help, but we can work for the future.

Dr. C. L. Outland, Greenville: The doctors have made some very interesting statements, but they sound rather discouraging. Coming to my county, Pitt, we find that 43 per cent of the total death rate is under two years and in the pregnant state. In getting an appropriation a few months ago to do maternity and infancy work, we called to the attention of the commissioners this particular thing that Dr. McGeachy has just mentioned, that you cannot expect any definite results in the next year, or two years. These men, I am thankful to say, are far sighted enough to see that. One of them said, "I do not expect anything, and I personally feel that in doing this work we ought not to let the people expect much." As for getting appropriations, I believe we shall get them without any trouble. It is one of the biggest pieces of work we can do, to my mind.

Dr. D. E. Ford, New Bern: It seems to me that we are discussing a universal problem and one that has lasted ever since the time of Genesis, and perhaps before that. We need not expect any marked results to show by figures in the course of a little while. Of course, this problem has been taken up from many different phases, among them birth restriction, in order to select the quality of our children. Then we have to consider the different races, the negro and white. I would like to know what the proportion is, the percentage of deaths in the different races. Then we have to consider the sanitary conditions of the town, how much infant diarrhea there is, how many deaths are caused by dirty water, by dirty milk, by insufficient sewage disposal, and by flies. I think we have depended too much on simply the nurses' work along that line. We ought to get back of that, get after the sanitation, get after our food, get after the sewage disposal, and get after the milk. All our health work is so interrelated that in scarcely anything can we get off from the main issue. I do not think we ought to look at any of this work as some one coming in and trying to sell something to the people. We ought to create the desire first and then give them what they want, not have some state agent or some one else coming in from outside and selling the idea, get an appropriation from the county commissioners. By publicity we ought to create the desire and, after they demand any special phase of public health work, give it to them.

DUTIES OF THE HEALTH DEPARTMENT FROM A HEALTH OFFICER'S POINT OF VIEW

D. E. Ford, M. D.
Health Officer Craven County and City of New Bern

The good that we can get from a gathering of this kind—this Convention of Health Officers of North Carolina—will come from the free exchange of ideas. We are all managers of groups working together for the same cause, whatever difference of opinion as to the methods.

No two of us have to work under the same conditions. A paper description of personal experiences—of problems, of successes, of failures—might be made, by a better writer than I, highly entertaining and perhaps helpful; but I have a feeling that my experience in public health is not wholly my own. It is so interrelated with the special conditions and interests of my community that to discuss it freely and publicly would be a disloyal betrayal of faults or a biased praise of virtues that can be of interest to only those that know and admire her. It is not a subject for public discussion. Besides, we are not here to boost our own counties, but to back a common cause and to acquire more of the inspiration and enthusiasm that will help us to make our counties worthy of being boosted by others.

I have chosen the subject of this paper with the hope of arousing discussion. I, out of the experience of only a few months in public health, have little to give, but if I can induce you, out of the wealth of yours, to open up, I will have served a purpose.

An outline of health department duties is given us by ourselves in collaboration with the State Board—the cost equivalent sheet. There is no danger of our forgetting this with the never ceasing competition that it fosters by quarterly comparisons; and the explanations we are sometimes asked to make as to why the three little figures at the bottom don't tell the whole story of our work. It is ever with us.

But we will have to admit that it is the best outline that we have been able to make and that it does keep us from letting up when the hot weather or bad roads weaken the flesh as well as the spirit. And by it we can each month see which department needs to be looked after and bolstered up. Our assistants see for themselves what kind of work they are doing. Without it we would tend to follow the ruts of least resistance specializing in the line of work most acceptable to our own community—the popular line. One town may be filthy (in back, behind the scenes) and like it that way. It would be easy and popular for us to like it, too. In another the dairies, which nobody takes the trouble to inspect, may be utterly indecent and the milkers without conscience; the markets ill-equipped and the meat fly-blown. The situation is easy to let alone. It is easier and more popular to put on a "Better Babies Campaign" or to get the co-operation of the Woman's Club to put

on a fly-swatting week. But that cost equivalent sheet tells you, and anyone else who analyzes it, and doesn't let you forget it, that you are dodging the issue.

As an outline and gauge of the work it is a live one, but we must not let it turn us from the main issue.

Our duties may be roughly divided into three general divisions. First, the strictly and universally accepted legal ones—comprising the care of county wards—jail, county home, and convict camp—quarantine, and physical examinations in those cases where a health certificate is required by law, marriage, teachers, for institutions, children for industry, etc.

Second: Those duties which, when carried out, buck up against financial interests. Dairy, market, cafe, and sanitary improvements all hit someone's tenderest spot—his pocketbook—and bring to the surface all the fight he has in him. He would often rather pay a lawyer to advise him not to improve than to spend the cash for better equipment. It is this economic aspect of our duties that test the strength of the health department and also puts its friends to the test. And by this we can be in the matter of friends often sadly disillusioned. The policy to be followed in handling this department is to show that progress (in the direction we wish it to go) will pay—if only, as in some small matters, by the saving of a fine and costs. In fact, it is the only way there will be progress that will last, it must be economically sound. And show your markets and dairies how to improve and (when they have done so) that it did pay.

In the care of the jail and convict camps we have to deal with several more or less contending factors and steer in the straight and narrow road. It is our duty to keep our charges in as good or a little better health than they would be if at liberty, and without too much expense to the county. We have to deal with a body of men whose average physical condition is low, and whose average incentive and ability to malinger is high. We have to always consider that discipline can always be made difficult by over sympathy and that there is invariably a misguided and misinformed section of the public ready to believe anything from a man in restraint. But above all, it is the convict's right to have sanitary and healthful living conditions and it is our duty to stand for nothing less.

The third direction of our duties is educational. This is where the real work is done. All the rest may be more spectacular; it may show up by big figures or by blank spaces on the cost equivalent sheet; its publicity may argue strong with those on whose appropriations our work must depend, but the real worth of our work is going to be proved by the generation of growing children. If we cannot educate them to demand as their right conditions of living and health habits that their parents may never have thought of—screened homes, clean water, clean milk and meat, sanitation, vaccination, bathing, and care of the teeth—public health work has failed. It is here that the competition engendered by the cost equiv-

alent may be dangerous. We must be careful not to let it keep us from expending thought and energy and time on plans whose results can only come years ahead.

County public health service is still young. But like all vigorous young animals it is destined to grow. It is our duty and chiefly ours (full time health officers) to guide its growth. Shall it grow into a lumpish, awkward, tactless pensioner, dependent upon state aid and millionaire philanthropy? Or shall it grow in strength and independence to be depended upon as an indispensable servant of the community? It is up to us.

Of all the duties of the health department this is its chief and all-inclusive—to make an assured place for itself. A place respected (if possible, loved) to which the whole community looks for assured service; and which will assist instead of being assisted by the State Board.

We must face the fact squarely that at present the health officer has not yet made a place of high standing for himself in the estimation of the medical profession. To many he represents a movement that will add to the already heavy burdens of keen competition in the game of making a living for the general practitioner. By others he is tolerated as, often, one who has found the pace set by general practice too fast and has dropped out of the race.

This criticism and distrust is the experience of every new movement. And the future depends upon the personality of those who represent it to the public. The county health department will be what we, each in his own community (and rather alone), make it, not by the amount of money we can secure and spend, but by the quality of the service we can give, and by the tact with which we work among the conflicting and often hostile interests such as are found in any county.

DISCUSSION

Dr. C. L. Outland, Greenville: I ought to know how to discuss Dr. Ford's valuable paper, for there are so many things a fellow could say. In regard to the various markets, cafes, etc., it seems to me that it is a hard thing to put across, for I have tried it. If you can get the fellow running it or owning it to see the value of cleanliness it is much easier than if you go at the matter from the attitude of the laws controlling it.

As to a convict, I believe you ought always to give him the benefit of the doubt if he claims to be sick. Watch him for a few days and then be honest and square with him, and positive.

When it comes to cost equivalents, I do not dare to discuss the matter. I do not understand them. I like them, in a way, and appreciate them, but in a way it makes the work harder for us.

When it comes to the doctors, you have to take their viewpoint. I think if you go to a doctor and sit down and talk to him, let him feel that you want to be a help to him and not a drawback, and ask his opinion occasionally, it helps. There you have to be mighty particular.

When you speak about education, that is the whole subject in a nutshell, to get the people educated. For instance, it is much better to show a man why expectorating on the sidewalk is liable to spread disease than to show him a fifty dollar fine as the result. Being a health officer calls for a great exercise of tact and judgment which it is hard to display sometimes.

Dr. Ford, closing the discussion: I have just this observation to make, it seems to me that the attitude of the general practitioner varies in different counties. In some they are behind the health work; in others they are not. We have to show them, too, that public health is going to pay them.

Besides the educational work, all depends upon the economic factor. If the work is going to be of value, is going to stand on its own legs, it has to pay the community. The sentimental side of it, with the churches, women's clubs, etc., will carry it on for a while. You can put on campaigns and drives, and one will drop out and another take its place. If the work is going to last we have to prove to the public that it is sound economically, whether it is the control of markets, dairies, etc., or whether it is educational work with children.

Dr. C. W. Armstrong, President: We have present with us as a visitor, Dr. Carl Puckett, State Health Officer of Oklahoma, and shall be glad to have a few words from him.

Dr. Puckett: I am not here to say anything, but am here to learn. I would like very much to see the papers when published. You know we have been having some ups and downs in Oklahoma, and I have been in office just three months. Most of that time has been spent in talking to job hunters. I have come here to learn how a model state health department works, from the state on down through the counties. Dr. Ferrell told me this is the model for the world, but I do not know whether that is true, because he comes from North Carolina.

I would like to find out something about the population of the counties, how much you spend in each county, etc., for I want to go back home and show them just what you folks are doing. We spend all kinds of money out there, for we are rich in natural resources (which makes politics very interesting, too), yet the average fellow is rather poor, and we have the deuce of a time in the farming sections. Our wealth comes from the soil, too, but in a different way from other states. These fellows go away down below the soil for oil, and they are fabulously wealthy, but the average man is just about the same there as here, perhaps.

As I said, I came here to learn, and I know that I shall hear some very valuable things.

SOME PHASES OF PREVENTIVE DENTISTRY

J. S. Spurgeon, D. D. S., Hillsboro

It is needless to say that I am pleased and honored in being invited to speak to you on this occasion.

We think it appropriate to say that preventive medicine and preventive dentistry go hand in hand.

The United States Public Health Service, the International Health Board and the North Carolina State Board of Health have accomplished so much that they are recognized as one of the greatest economic and conservation forces.

It would be out of place to recite the many achievements of the North Carolina State Board of Health, but I must say that its activities in regard to the school children from a dental standpoint are very much appreciated by the dental profession.

You are preaching the gospel of self preservation in such a forcible way that splendid results must follow.

SOME PHASES OF PREVENTIVE DENTISTRY

People do not die suddenly, there is no such thing as sudden death except when it is due to violence or accident. We speak of heart disease as sudden death. Many hearts, as a result of hypertrophy of the orifice over which the valves close will leak and murmur, and yet life swings on for years. There must be a primary cause of the inaction or perverted action of any vital organ before its function ceases. Let us see if we cannot point to the incipient cause, the very beginning of the perverted action of some of the vital organs and glands of the human body.

Statistics show that cancer, pellegra, tuberculosis and other diseases are on the increase and I am convinced that tooth caries, pyorrhea, acidosis, and stomatitis are largely on the increase.

During the past few years the subject of a healthy mouth as related to general health has been pretty well discussed by both the physicians and dentists, and it is pretty well agreed that any person who desires to maintain normal health, should see to it that his mouth is clean and free from all infection. The dentists are theoretically and practically concerned in the maintenance of health throughout the body. However, in the past his efforts have been limited largely to the oral cavity, but when it is understood that the subject of nutrition has a direct bearing on the cause of caries, pyorrhea, salivary secretion, etc., and that all these have a direct bearing on general health, then his field becomes very much enlarged.

CARIES AND PYORRHEA ON THE INCREASE

In spite of all that has been done, and in spite of the fact that our energies have been largely increased along the lines of prevention, we believe them to be still on the increase. A few years ago we rarely ever saw a person under 35 years of age who had pyorrhea, today we see it in the mouths of children 12 to 15 years old, and notwithstanding the voluminous discussion as to its origin, whether it is local or con-

stitutional, we are convinced that it is a most dangerous infection and is indirectly and directly the cause of many chronic ailments and untimely deaths, there must be a fundamental cause.

Just a few years ago we were told that abscessed teeth was probably the cause of infected kidneys, neuritis, insanity, and most anything else, there was much of truth in this, and we insist that the most reasonable thing to do is to remove the foci of infection from the mouth, tonsils, nose and intestines. However, just as we thought these things were pretty well understood and agreed on by both the medical and dental professions, a new light appears, and as time passes it grows larger and brighter, and looks more plausible and reasonable.

It is not so many years since Pasteur was held in derision, and scoffed by professional men.

It is within the memory of many men in this company that Surgeon Gen. Gorgas made it possible to build the Panama Canal by controlling the deadly anapheles. It is not so many years since yellow fever was looked upon as a curse sent from God and must run its course.

A few years ago Drs. McCollum, Sherman, Howe, McCann and others began some investigation in regard to nutrition and they tell us that these foci of infection are not the incipient or primary cause of all these conditions, but that it is all caused by mal-nutrition. Let us hand them the flowers now and not wait to erect a monument as was done to Pasteur and others.

I am much pleased with one thing, and that is, they make it so plain that even the laymen can understand it. They simply tell us that if we will get back to the original foods and in so far as possible do not destroy them by cooking, and eat largely of leafy vegetables, we will get sufficient amount of mineral salts to maintain health and prevent many of these chronic conditions that we have been interested in trying to cure. Even the once despised cabbage head has come into its sphere of praise, and is said to rank with lettuce and celery when eaten raw. One feature of the laws of nutrition we are endeavoring to emphasize is that these food minerals are so essential to life and health of the body, that when the body is deprived of them disease must follow.

Why is it that young mothers must always have trouble with their teeth; because they did not have enough calcium in their blood, the baby had to have calcium for the formation of its bones, he drained the calcium from her blood, he also robs from other stores which they cannot so readily see. If they had the right food they can supply a sufficient amount of mineral salts for themselves and child.

ACIDOSIS

The physician is rarely consulted for acidosis until it becomes acute, the dentist recognizes its baneful results from the beginning, when we see hyper-sensitive teeth, teeth deficient in lime salts, stomatitis, etc., we are convinced that the original cause was improper nutrition caused by the acid forming foods. Treated with calcium

and magnesia we can relieve this condition temporarily but the most reasonable thing to do is to eat food that will supply the necessary calcium and potash and other mineral salts.

While Dr. McCollum and others were investigating this subject on general principles, Dr. Percy W. Howe of the Forsyth Infirmary began investigating with a definite object in view, and that was to determine whether food such as is daily eaten will cause dental caries, pyorrhea, etc., on monkeys, and so far as I know he has not submitted a written report, but it was my pleasure to hear him and see lantern slides of the disease and infection that have been caused by deficient food given to monkeys. First, the monkey in its wild state has never been known to have pyorrhea or tooth caries, in an incredible short time after these experiments began he found dental caries, pyorrhea in all stages until the teeth became loose and dropped out, ulcers on the lips, swollen ankles, rickets, etc., and if persisted in, death followed. Along with the number that was treated thus, some were given the proper food before it was too late and their health was restored. He said that it was most interesting to note the stupid and miserable appearance of these monkeys, and that almost immediately after giving them the proper off-setting food their countenance changed and they became playful.

Dr. Howe tells us that all the organisms found in the human mouth have been placed in the mouths of monkeys and that they did not grow. The monkey in his normal state is immune from all these bacteria commonly found in the human mouth.

Most caries are caused by insufficient amount of mineral salts in food, which probably extends back to the prenatal period. Fed on scarbutic diet monkeys teeth decay as early as nine months, and all have gastric intestinal disorders, tetanus, spasms, epilepsy and rickets are prevalent.

All these things cannot be determined by chemical analysis, but we must return a natural kind of diet. We submit that these experiments have not gone far enough to prove that like results are applicable to humanity, but we think it sufficient evidence to compel us to take notice and encourage and follow these investigations.

Some years ago the midwife believed a baby must have catnip tea at intervals during its first few months of life. I wonder if this is a fragment of fundamental knowledge that has been handed down for many centuries. However, that may be, it is now clearly demonstrated that the broth from the green leafy vegetables is the richest of all known foods in the mineral salts, which are so absolutely essential in the health of man and all other animals from the cradle to the grave.

Personally, I am convinced that denatured food is the cause of mal-nutrition, that mal-nutrition is caused by acidosis, and acidosis is caused by the lack of mineral salts in the food that we eat. In this connection I wish to read an account of Alfred W. McCann's experience with the men of the Kronprinz Wilhelm when she was marooned at Newport News in April, 1915, because it is interesting and the best evidence that we know in support of the investigations of the gentlemen mentioned.

THE STORY OF THE KRONPRINZ WILHELM

Previous to the war the Kronprinz Wilhelm was a palatial transatlantic passenger steamship belonging to the North German Lloyd. In 1914 it was converted into a German raider and sent out on the high seas to sink merchant vessels bound with supplies to the Allies. Leaving Hoboken August 3, 1914, its officers and crew thoroughly understood that they could not again touch port until the war was over. They were out at sea for nine months before the tragedy which we are about to record occurred to their men. During this time they captured, bombed and sunk fourteen vessels. Each of these vessels were robbed of its food and fuel supply before being sunk. From each of them the Germans took practically the same things. Plenty of white flour, white biscuits, sweet crackers, butter (or oleo), potatoes, canned vegetables, fresh meat, condensed milk, tea and coffee, and refined sugar.

Two of the vessels sunk were bound for Liverpool with whole cargoes of fresh meats. These the Germans crammed into their own perfect refrigerator system. (Some they salted and corned.) They had meat enough to feast upon and to last them indefinitely.

Two other vessels were laden with cargoes of whole wheat. From these the Germans took only the available white flour, butter, potatoes, and canned vegetables, ham, bacon, etc. They sent the precious wheat to the bottom. If the Germans had known what was going on in their bodies, if they had known the priceless value to themselves of the phosphorous, potassium and calcium salts contained in that whole wheat, they would have gathered and stored and guarded it as so much unalloyed gold. But the Germans did not know that they were sick. They did not know that the absence of these minerals was slowly robbing their tissues of life and bringing about a condition of acidosis, which would eventually cause one hundred of them to drop without warning, paralyzed, to the neck. They were eating typical American meals—plenty of fresh meat, boiled or mashed potatoes, canned vegetables, white bread and butter (or oleo), tea and coffee with sugar and condensed milk. These in various appetizing forms they ate three times a day plus a substantial mid-afternoon lunch. Out in the fresh air of the open seas "fed up" with these typical American meals they should have been feeling very fit indeed.

They paid little or no attention to lesser ills or symptoms of lowering vitality and it was not until the conditions became extreme and the men completely incapacitated that the ship's surgeon (Dr. Perrenon) became seriously alarmed. Some of the men collapsed after they had been out six to eight months, but in April, the ninth month, they began going down like ten-pins at the rate of two to five a day; some of them keeping up until the last minute and then dropping helpless to the deck; 110 of them were down. Dr. Perrenon found himself totally unable to relieve the suffering of the men. One thing he knew: That he must make a dash for some neutral port at once or they would be out on the high seas manned with 500 dead

bodies. Accordingly they headed for America and on April 11, 1915, arrived at Newport News in the James River after having been out on the high seas just eight months and eight days.

Immediately on their arrival the best medical aid of New York City was called to their relief. Every one else was barred from the ship. Mr. Alfred W. McCann was at that time working on the New York Globe conducting a campaign to educate the people in food values and food science. Mr. McCann had devoted a life-time to the study of mal-nutrition and its causes and was therefore most intensely anxious to get on board the stricken ship. He was close to several high officials but although he pulled every wire he knew of both in New York and Washington he could not break the ban. Newspaper men were especially barred.

He brooded. Rumor said there was beri-beri or something very closely resembling it on board that ship. What had the men eaten? Mr. McCann was doing his utmost to fight the white flour evil of America. Was this perhaps the very lesson he needed to prove his point?

His work was in the interest of humanity. He resorted to stratagem. He had a card printed with the name of an eminent physician, hired a launch and climbed on board the ship—presenting his card. He was ushered at once into the salon where sat the twelve medical men in consultation.

But almost immediately on entering he was recognized by a New York health officer who sprang to his feet and said: "Gentlemen, this man is not a physician—this is McCann of the New York Globe." Mr. McCann knew that it was not a moment for courtesies—neither was there a moment to lose. He replied that he was McCann and that he was there because he was a student of mal-nutrition. And if there was beri-beri on that ship why all the hysteria and secrecy when there were hundreds of cases of the same nature in New York City—due to the same cause.

He said just enough to interest the ship's surgeon, Dr. Pherrenon, who stepped forward and extended his hand saying: "Mr. McCann, I will hear all you have to say when these gentlemen have finished."

When the doctors had finished their consultation and returned to the city, Dr. Pherrenon and Mr. McCann discussed the situation in detail. Mr. McCann called the former's attention to certain findings made by Dr. H. C. Sherman of Columbia University and of other men of equal courage and repute in which it was proven that a diet of demineralized, degerminated foods would bring about a condition of mal-nutrition of greater or less gravity, depending upon the extent of the cause.

It was then shown in discussion that every item of food which the men had eaten had been acid-forming—meat, boiled potatoes, canned vegetables, white bread and butter (or oleo), cheese, and sweet biscuit. There had been absolutely no alkaline element. The alkaline necessary for the body to function had therefore been taken from the tissues, bones and blood of their own bodies. The blood and tissues of the men had become thoroughly saturated with acid.

What, then, was the remedy?

Dr. Perrenon asked the question. Mr. McCann replied that since the bodies of the men were saturated with acid the logical remedy would be to give them vegetables alkaline as fast and as freely as possible. He therefore suggested that they be given in solution. The men would be able to get the alkaline in greater quantities in this way than by eating.

Definitely his suggestions were:

1st. That one hundred pounds of bran be steeped in 200 pounds of water and a large glass of the liquid fed to the men each morning.

2nd. That all kinds of available leaves and vegetables be scrubbed (not peeled) boiled, the liquid fed to the men as soup in generous quantities (vegetables thrown away).

3rd. That potatoes be scrubbed and peeled; the potatoes thrown away, the peelings boiled and the liquid given to the men—a small glass once a day.

4th. That the men should have milk, egg-yolk, and fruit in prescribed quantities; also a small amount of whole wheat bread and after a week of above treatment, the vegetables of the soup.

Under no circumstances should they have any acid-forming food.

After the deliberation, Dr. Pherrenon decided that since the men had thus far resisted all medical treatment it would be wrong to withhold from them the alkaline treatment. This decision was made and the treatment started on April 16th. Up to that time the men were still going down at the rate of two to five a day.

On April 17th there were no new cases. Neither were there any from that day on. In four days the men showed a marked improvement and in ten days forty-seven of them were dismissed from the ship's hospital and one of the completely paralyzed victims was able to stand on his feet without help.

Dr. Perrenon expressed astonishment and satisfaction at the completeness of the cure and said that the lesson in food values would not be lost to Germany.

Mr. McCann reported the facts in detail to the Surgeon General at Washington, believing that here at last was the proof which, if spread broadcast would open the eyes of the public. We were not then at war with Germany and Bernstorf suppressed the incident. Thus the public, living on a demineralized, degenerated, denatured diet has not yet learned the danger to their bodily well-being. "But," comes the question from someone, "Why don't these typical American meals have an equally disastrous effect on the Americans who eat them?"

The answer is this:

We at home who eat the occasional apple, or piece of celery, or lettuce, etc., give to our bodies some alkaline (mineral) element which is greedily taken up by the tissues, thus postponing a breakdown. The acid-forming meals such as the Germans ate (meat, boiled potatoes, canned vegetables, white bread and butter), gradually rob the tissues of resistance. The small amount of alkaline (mineral) element taken prevents complete collapse—but leaves us susceptible to every ill that blows.

There is no such thing as "Sudden Death." The process was slowly going on for a long time previous to the collapse. The Germans had no "offsetting" foods and it took just nine months to break them. They didn't know they were sick until the break came. Beri-beri is the extreme end of mineral starvation. There are many stopping places this side of beri-beri.

What a wonderful race of sturdy upstanding men and women we would be if we ate the foods as Mother Nature prepares them for us containing all food elements in the right proportion.

Many thinking people are now calling attention to the imperative need of strengthening the social fabric.

Huntington points out that this can be accomplished only by the inherited factors in the health and training of our children. He emphasizes the fact that good inheritance or good training can serve the individual only when health permits.

The man or the woman who is always tired or who feels no joy in actively prosecuting the work in which he or she is engaged, is essentially a victim of poor health.

The value of an individual to society will be determined in a great measure by the way he feels. His capacity for energy output and activity, his estimate of himself and his attitude toward his environment are profoundly influenced by his physical condition. That emation cannot be separated from its physical concomitants, has been recognized for many years by psychologists.

Except in relatively rare cases where mental defect is inherited, there is no gloom in the mind of the physically well. There are many persons with wide experience who hold the view that much delinquency among children, and criminal tendencies in adults are due to physical defects.

Keen observers have expressed it as their belief that in a large part of the population of Europe and America, serious physical deterioration was in progress. Lack of physical fitness was seen in the very large numbers that were rejected as unfit for service in the World War.

If one examines the writings of those of today who are most active in studying the health problems, and in arousing the nation to activity along these lines, they find various causes assigned for existing conditions. But we think it a pretty well established fact that the chief factor lies in the unwise choice of food. Instinct will not guide children or grown or adult people in the selection of their food. Too often it is selected for its appearance (often artificial). The picture on the box or the label on the can.

Malnutrition is not, as many have believed, ordinarily the secondary results of those physical defects which the clinic seeks to remedy. But it is the primary cause from which these physical defects generally arise.

It would be out of place to recite statistics, but when we remember that 400,000 children in the United States under two years of age die annually, and that the examination of school children between six and twelve years of age show 75 or 80 per cent afflicted with diseased tonsils, eyes, adenoids, or teeth, we should take the matter seriously.

And it is a fact that in this State we have taken it seriously and have established medical and dental clinics that are far-reaching in their results, but we must get at the primary cause, right food.

Some time must elapse before a full appreciation of the importance of the selection of food can be appreciated at its full value. But when it does arrive, we will be getting at the root of the evil, and if we can apply the scientific principles of nutrition to the daily life of the nation, we will leave to our children's children the priceless heritage of freedom from the physical suffering which we must bear.

DISCUSSION

Dr. Charles S. Mangum, Chapel Hill: Dr. Spurgeon's paper has an underlying foundation of chemistry that a man of my age and experience ought to have the wisdom to dodge. It would take an expert food chemist to speak intelligently about the scientific background of this paper, but there is something else there that I think calls for the most serious consideration by a body of this type. This is an appeal from a practical man to those of us who are interested in public health problems to carry out what must be an educational program among the people of the State, to convince those who provide for the nutrition of the body of the importance of what we call a rational diet or a well balanced diet. These are terms which people use constantly, but do not know what they mean—a proper balance between the acids and bases of the body. He pleads for more attention than we have given this matter heretofore. All of us realize that this question which he has discussed would probably touch every problem to be dealt with by this Association. Yet the reason why so little progress has been made in handling it is that the men who are carrying out the work we are engaged in are poorly equipped in this field—in other words, we should have to be chemists. But at least we can preach, and people will not ask for the scientific explanations. I think our tendency as medical men is very often to use too many scientific terms, to cover our ignorance with a blanket of words and fail to use common sense in teaching ordinary everyday people that what was good for our grandfathers is not necessarily good for them. I do think that those of us who are interested in public health should work through school children and other young people to teach what a rational diet is, not necessarily what lies behind it.

Another very significant thing about Dr. Spurgeon's paper which appealed to me is that here is a practical man discussing a practical problem, and you notice that he has been forced into the field of chemistry to find the solution. It is an everyday problem to him. Teeth are decaying; he realizes the underlying causes; he sees the malnutrition of those who come to his office. Though he may remove the foci of infection, he cannot prevent the decay by simply treating the teeth. He is not a chemist by training, yet he is reaching into the field of chemistry for an understanding of his daily problem. This points to a very significant change which is taking place in medical practice. When we were medical students, you and I looked upon chemistry as a nuisance, and a great many students of the present day have the same view. However, in spite of that, year by year

chemistry is being given a larger and larger place. A medical laboratory is now about one-half chemistry. I notice that the older man who comes back wonders why, and does not altogether approve. The truth is that the day is not far distant when an actual practical, working knowledge of chemistry is going to be even a more important and fundamental part of the equipment of the practical medical man than—let us say—human anatomy.

Dr. Spurgeon, closing the discussion: There is nothing further that I can add, but I wish to thank you for the cordial reception you have given me, and thank Dr. Mangum for his kind allusions.

THE VALUE OF VOLUNTARY ORGANIZATIONS IN PUBLIC HEALTH WORK

Katharine Myers, R. N., Raleigh

An unbiased person is probably as hard to find as the proverbial needle in the haystack. We are apt to champion the policies of whatever cause we happen to be connected with and are too often unwilling or unable to study a question from any broader standpoint.

In considering values in public health work, we can make no progress unless we divest our minds of prejudice and preconceived notions on the subject, and, seeking only to know the true from the false, strive to *accept truth* wherever we find it.

By voluntary organizations we mean those supported by contributions as distinguished from official, or obligatory, agencies supported by taxes. Although the volunteer agency preceded the official, it is only in recent years that an amazing growth of interest in public health has given rise to thousands of these groups ranging all the way from a little church society or a charity association to the wealthy foundations and national organizations specializing in the various fields of tuberculosis, child welfare, social hygiene, blindness, cancer, sanitation, promotion of public health nursing, and so on.

Experimentation, Demonstration.—Some of these national organizations have performed valuable service in testing out new ideas and demonstrating the worth of certain projects. Not yet has the last word been said on any health measure, preventive or curative.

> "New occasions make new manners,
> Time makes ancient good uncouth,
> He must upward still, and onward,
> Who would keep abreast of Truth."

The world is on tiptoe for the next discovery, the striking improvement in methods or technique. These come from research, from experimentation, from demonstration. If an official agency wanders in unploughed fields, tries out new schemes, flits from plan to plan and back again, it simply invites the "hue-and-cry" of "wasting tax-payers' money," that hardy perennial of the ever-

watchful press. The non-official agency, on the other hand, has freedom to work out new conceptions, new policies or methods. It may be established for that special purpose. There is no check on its enthusiasm and initiative in the chosen field. A certain strong national agency has contributed enormously to the study of disease by groups by collecting and tabulating vital statistics and analyzing reports of field workers. Another has adopted the baby and the runabout child and has revolutionized the health teaching of school children. Tuberculosis is "on the run" and in the eradication of this great scourge of mankind a well-known volunteer organization has aroused an apathetic nation to the zeal of crusaders. And still another, with world-wide influence has made such requirements for nurses working under its auspices as to set standards of lasting value and incidentally has focussed attention on the urgent necessity of better preliminary education and training for public health nurses generally.

Developing Public Sentiment.—As we scan the pages of nifty, new health magazines and note the vast sums of money pouring into health channels, as our desks pile up with inquiries about health matters, and requests for assistance, it almost seems as if the battle is won—but not so. Sixty-nine counties in this progressive state are without a health department, and fifty-five without any form of public health nursing. As for hospital and sanatorium facilities, the story of Carolina's need has never yet been told. The tragedy of a wrecked life, a lost life from lack of proper attention is daily re-enacted under the eyes of hundreds of public health and social workers. Here is a fertile field for the volunteer agency, and we have a striking example of success along this line in the splendid new sanatorium recently completed in a neighboring county. More notable progress has been made in arousing sentiment for public health nursing which really began in the first century of the Christian era with volunteer workers of the primitive church and has slowly developed through the ages and greatly broadened in the last twenty years because of scientific discoveries and the spread of democratic ideas. More than fifty communities in North Carolina have initiated some type of public health nursing through organized groups, almost "lifting themselves by their bootstraps" as in practically every instance it meant all funds must come from local sources.

Not infrequently volunteer groups are behind the movements for health units. In at least two counties they are known to be directly responsible for the favorable action of the county board. Who but the people themselves, banded together in whatever fashion seems expedient, can develop the sentiment for better health conditions and more efficient machinery? Verily the most thrilling part of the health game is to observe the slow evolution of passive citizens into active boosters, untiring workers for some cause of health or welfare. Whence comes this passion for human betterment that springs to life at a touch, at a suggestion?

Supplementary Work.—It may be well to state emphatically that in the Utopia toward which we are all toiling, the official agency will assume the leadership in and the responsibility for all forms of health work in the community. Theoretically, this is true now, but unoccupied fields all about us and the impossibility of any one agency meeting the needs constitutes a ringing challenge to all whose thoughts center on human welfare rather than personal ambition. Even where the health unit idea is well established, there is a continuing need for the non-official agency. Is the budget sufficiently large to cover laboratory service, sanitation, dairy and food control, communicable disease, medical service, school inspection? What about instruction and proper care for every prenatal and postnatal case, early and continuous supervision of all babies and runabouts, diagnosis, guidance and care for every tuberculosis case, more intensive school work, and instructive bedside care? These are the yawning gaps in our health programs into which the volunteer agencies are peering, and only await leaders to get at the business of closing them up.

Democracy in Health Work.—Many long-winded theorists have tried to explain what is wrong with public health work, but when all is said and done does not the problem resolve itself into this:

How to get the knowledge over to the people and how to transmute that knowledge into action! In one of our western counties a group of folks widely representative of the county's interests has come together as an advisory committee to promote better health conditions. They have adopted a slogan "Every interested agency working together for health." If this movement means anything at all it means the democratization of health work, making the citizens more responsible for determining values, policies, methods, growth. Such a group, if taken into partnership, will act as allies of the health officer and the public health nurse, enlarge their sphere of influence, and help to "make two blades of grass grow where one grew before." But too often does the nurse say, "I'd rather do it myself than bother with volunteers" and wastes valuable time in numberless duties not requiring technical training which volunteers would gladly do. Too often does the health officer resent offers of assistance as "meddling" and the volunteer group dissolves, willing as good Americans to "let George do it." This is fatal shortsightedness on the part of official workers, for as co-operative members of such an allied group they have an unparalleled opportunity for leadership and control. Fortunately, we have very few instances in our state of such obstructionists, but in all fairness we must admit the official workers are overwhelmed with their prescribed duties and have little time for these contacts. But if the attitude is one of welcome and encouragement the door will be open for co-ordination and the guidance of these powerful forces into proper channels of activity will follow as surely as the day the night.

Political Perils.—As long as we are haunted by the menacing specter of party politics, we shall need the volunteer agencies, national, state, and local. In an Ohio city of seventy thousand a

change of administration threw out every official and employee except two stenographers and the public health nurses, that latter under Civil Service with a lay-board back of them. This warning from a Wisconsin bulletin is significant: "It is of the greatest importance to tie up public health work with the voluntary organizations. A political body back of the service does put the power of the law behind the work; but if the work is tied up with the political group only, a change in the administration may imperil the whole program, and destroy all that the predecessors have built up. A body of people uninfluenced by politics, organized because of a common interest in community welfare, is the best safeguard there is against the dangerous reefs and rocks of bad politics. It is to the voluntary organization we owe the existence of public health work. We can not successfully build our structure without the help of this unselfish body of people whose guardianship is still needed if we are to hold the ground we have gained."

Co-operation.—And, lastly, just a word about co-operation between official and non-official agencies. We are all agreed that this must be accomplished if best results are to be obtained. We shall never do it by means of "scraps of paper" or solemn pronouncements. The secret is given in the words of a prominent southern social worker as follows: "The doors of the public and private agencies must be kept open to each other for frequent consultation on specific problems. In addition they should contain some mechanism such as the central council, for regular organized conference in which they might join in planning their respective parts in a community program.

The words of Woodrow Wilson in his Manchester speech concerning the League of Nations are applicable to every community: "It is necessary to make some great effort to have with one another an easy and constant method of conference, so that troubles may be taken when they are little and not allowed to grow until they are big. I never thought I had a difference with a man that I did not find when I came into conference with him that, after all, it was rather a little difference, and that if we were frank with one another and did not too much stand upon that great enemy of mankind which is called pride, we could come together."

DISCUSSION

Dr. W. A. McPhaul, Charlotte: After seventeen years of public health work, as part time health officer and whole time health officer, I have come to the conclusion that the sum total or end results of a well organized health department, or the active duties of a health officer, is about seventy-five per cent in educating the public, ten per cent more education, another ten per cent education, and, we might say, the last five per cent education. I am sorry for any health officer who does not have the support of local voluntary organizations. With the possible exception of the newspapers (I might say here that I would not do public health work in a town or in a community unless I could have the support of the news-

papers), voluntary organizations will do more to hold up your hands and to support you and help you put across this educational program than any other agency. If I were going into a new county to do public health work, the first six months I would try to organize these different organizations to help me in that county. About two and a half years ago public health work was organized in Mecklenburg county. Dr. Collins, assistant health officer at that time, spent about three months in going through the county, lecturing and trying to educate the public. We have in Mecklenburg county several different local organizations who help us in our public health work, and we have never had any trouble—I do not know of a single instance in which we have had trouble—in putting across a program in Mecklenburg county, simply because we have the support of these local organizations. In Charlotte we have an organization known as the Good Fellows' Club. This organization of men meet once a month, six hundred strong. The only women that are present at these meetings are our public health nurses. They see them and hear their reports, and know what they are doing. Those six hundred men go out from that meeting and say something to their neighbors, their neighbors say something to someone else, and so the work goes on. In the city health department alone we have thirteen nurses. Voluntary organizations support ten or eleven of these nurses, but we hire them and we fire them. These different organizations simply furnish the money. This keeps down trouble if you can secure nurses from voluntary organizations, have that understood. If you don't, you will have trouble. If Miss A knows that the Good Fellows' Club is employing her, or the Woman's Club, then she will go to the Good Fellows' Club or to the Woman's Club, or some member of it, when trouble comes up. With the exception of the school board, our nurses do not know who is paying their salary. I recently received a letter from Dr. Frankel, of the Metropolitan Life Insurance Company, congratulating some one, he did not know who, on the results in Charlotte. We have a co-operative nurses' association which meets once a month, discussing the duties of these nurses, outlining plans for them, etc. In a certain way and a certain manner they have been able to put across nearly everything they have wanted to put across.

Some time ago we had a mosquito survey made. It required $9,000.00 to put the work across, and the commissioners were rather slow in making the appropriation. But when they heard from the Nurses' Association, from the Woman's Club, from the Rotary Club, from the Kiwanis Club, they soon made that appropriation. If you haven't these associations, get busy and organize them, and get their co-operation and support. You can put across anything you want.

INFORMAL TALKS AND DISCUSSION

The program for the morning session having been completed, the President asked several members to speak, as follows:

Dr. Richard H. Lewis, Raleigh: I came up to show my interest in what you are doing. Of course, you are familiar with my history in connection with this work. Because of my age I am laid on the shelf and can not take any active part in public health work, but I am very much interested indeed in the papers which I have heard, especially in what Dr. McPhaul said. Fifteen or twenty years ago we did not know anything about focal infection, but now we are finding out what is at the bottom of many obscure troubles. In regard to nutrition, of course, as Dr. Spurgeon says, that is at the foundation of it. While our dental friends do a great deal to protect our teeth, yet we have to do radical things if we are to get to the bottom and eliminate malnutrition, which is at the root of our troubles.

I was very much impressed with the paper read by Miss Myers. I thought to myself that our friends of the other sex are certainly holding up their end.

I wish to tell you that you have my heartfelt sympathy. Although I am laid on the shelf and unable to do any active work, my heart is with you.

The best health work I ever did for North Carolina, in my judgment, was when I discovered three young men, Dr. Rankin, my successor; Dr. Shore, of the laboratory, and Dr. Ferrell. I feel that they are my children, in a way, and I am very glad that the work in which I was so deeply interested is in such competent hands.

Dr. A. J. Crowell, Charlotte: Dr. Lewis speaks of being laid on the shelf, but we all know there is nothing in that. We know that Dr. Lewis is mentally the peer in medicine today of almost any man in the state of North Carolina. Physically he is weak, of course, but mentally a tower of strength. We younger men, who enjoy and profit by Dr. Lewis' presence and wise council, are always inspired by his presence. As a member of the State Board of Health I always feel that we do well to follow his leadership and counsel. It is a joy, I am sure, to all of us to have you with us today, Dr. Lewis.

With regard to health work in North Carolina I want to say just a few words, more especially in regard to what Dr. McPhaul had to say about education. That is the great problem. His plan to get the people interested through these volunteer organizations, such as the Good Fellows' Club, Civitans, Rotarians, Kawanians, Women's Clubs, etc., is an excellent one. I do not know of any other Good Fellows' Club than the one we have in the city of Charlotte, and it might be well for me to tell briefly how it came about, its objects, and accomplishments.

A minister in our city became interested in taking care of the sick poor. He got twelve men together,—men whom he knew were interested in caring for suffering humanity,—and proposed that

they employ a nurse to take care of the sick poor through daily visitations and ministrations. This was done. From that group of twelve men it has developed into an organization of about six hundred. At its monthly meetings three speakers are chosen to speak for three minutes, presenting the needs of an individual or family. The most needy object of charity presented by these men is decided by a vote of the members present and $20.00 given that object. At every meeting so far some individual or group of individuals have given twenty dollars to each of the other objects presented and often times several hundred dollars additional. They are interested in public health work, interested in taking care of the sick poor, interested in preventing the spread of disease, interested in taking children out of immoral surroundings and sending them to school. They started with one nurse but now support three or four and are much interested in the whole field of preventive medicine. If you have not such an organization in your town, go home and start one.

Another way to get people interested in public health work is by public lectures. This perhaps can best be done by some one other than the health officer. If this work can be done through some organization similar to the above mentioned ones I think it well. You sell the work to the organization and they in turn to the general public. Last Saturday night, at the county chatauqua of Mecklenburg county, Dr. Munroe put over a program that was very fine I thought and the people were very much pleased with it I am sure. He secured six speakers and gave them ten minutes each to discuss some public health problem. Dr. Tucker spoke on the importance of eye inspection and their care; Dr. Peeler on diseases of the nose and throat and illustrated same with lantern slides; J. S. Hoffman, D. D. S., spoke on the care of the teeth; and Dr. Faison on proper food and clothing for children. The people were intensely interested. They were told of the importance of joining in public health work. I believe work of this character will interest people in public health work, and that great good can be accomplished by giving similar programs at such public gatherings.

Dr. J. Howell Way, Waynesville: Public health is like the poor, we have it ever with us, and there are always opportunities for service. But there has never been a day when God's bright sunshine poured down upon us that everybody appreciated the importance of public health as they do today. Dr. Lewis' name was mentioned just as I came in. Nobody can say anything about public health in North Carolina now, and nobody can talk about it in North Carolina twenty-five or fifty or a hundred years from now that does not mention with gratitude and affection the work and the sacrifice for that work of Richard H. Lewis. His pioneer work along this line has been an inspiration to the profession and to the public, and much of what we are reaping now has been of Dr. Lewis' sowing and careful nurture.

But this work is just beginning. I believe the soil in public health work in North Carolina has just been scratched, because, you know, it has ceased now to be a doctors' problem, it is bigger than

the doctor; it has become a public problem, the people's problem. You older doctors in the audience will remember that a few years ago, when we met, we used to deplore the fact that we did not have money to do so and so. As an official of the State Board of Health I can tell you that for a number of years past the fear has not been to get money out of the people of North Carolina, but a fear and trembling that we spend their money wisely and well. There is no trouble in getting money for any authenticated health work. They will give, and give gladly.

Well, it has become a public problem, so in another sense it has become more than ever the doctor's problem, because the work of the doctor has brought about the knowledge on which public health activities and on which disease prevention are and must be based, and the practical question before doctors today is whether they are going to work right along in the line of development, whether they will lead their community, or let active, thinking, zealous laymen lead and the doctors lag. I am an optimist, and I believe the doctor is just as he has been in all the ages of the past, from the days when Homer sang his praise and referred to him as the "wise physician, skill'd our wounds to heal, ... more than armies to the public weal." That was the doctor then, that is the doctor now, and that will be the doctor of the future. But the doctor's responsibilities to the public weal were never greater than they are now. I believe, under the inspiration of men like Lewis, this work will go on and that the individual doctor in the community will feel that it is his duty to get behind every properly conceived health endeavor in his community and help to push it along. He is going to do that because it is his duty to do it, and it is to his interest to do it—his interest as a doctor and as a citizen.

I want to say just one word more while I am on my feet. Never in the history of the State Board of Health have we emphasized more this idea of the responsibility for local public health work being not a proposition at Raleigh, a proposition out and over the state, but a proposition at home. The State Board of Health wants the average doctor to feel that the responsibility for successful public health work in his community, in his town, in his county, rests upon the organized medical profession. The public will understand that, and, as I said just now, if you do not move and progress fully in keeping with the measure of the times, with the proper concept of your professional duty to your community, there will be people in the community who will pull you along. But you will not need any pulling. The North Carolina doctor, in my judgment, has been and is about the finest citizen the state has, and he will measure up to his responsibilities in the future as he has in the past—up to the limit of those responsibilities.

Dr. John A. Ferrell, New York City: The discussions which occurred this morning were most interesting. The paper regarding the field of usefulness of volunteer health organizations especially

interested me, as I am a representative of such an agency. A clear understanding between the official and unofficial agencies should be established.

As indicated by the author, the volunteer agency can engage in a number of activities which will distinctly promote the interest of the official agency. For example, as was pointed out additional knowledge is urgently needed regarding diphtheria and nutrition. The official agency usually finds it difficult to secure appropriations for the support of research work, whereas the volunteer agency may finance such activities. In the development of effective procedures we always find a need for additional scientific knowledge which can be acquired only by research.

Frequently the official agency desires the co-operation of volunteer agencies in creating public sentiment which will lead to the enactment of suitable laws and to the appropriation of the necessary funds. The volunteer agency, being more or less disinterested, can mold public sentiment more readily than can the public officials in regard to more adequate compensation for health workers and other matters which will serve the cause.

In the absence of wise leadership the volunteer health agency can become a tremendous nuisance and confront the public officials with needless difficulties. From time to time they may attempt to carry out unsound programs, or programs which may seem unsound to the public official. You should not be unduly disturbed by such undertakings because if they are unsound they will inevitably fail. The tendency is toward the adoption of programs mutually acceptable to the official and volunteer agency and to work in co-operation.

In most states leadership in public health has been assumed by the official agency and the private agency as a rule has recognized this leadership and has been co-operative. In a few states the official agency was backward in its development, due in some instances to the influence of partisan politics or other causes, whereas the volunteer agency had effective leadership, competent personnel, and generous public support. Consequently its resources would approach or exceed in amount, those of the official agency. In such instances it has not always been easy for the volunteer agency to withdraw from leadership and promote the growth and development of the public agency when conditions warranted its expansion. Complications of course follow. Fortunately, as indicated above, the trend is away from a conflict of interests and toward the finding of common ground for service. Where the official and the volunteer organizations have the correct conception of their functions there should be no occasion for controversy.

It is a pleasure to be here. I sincerely appreciate the remarks of Doctor Lewis and of Doctor Puckett. In enumerating the causes for the exceptional success of the health work in North Carolina, particular emphasis should be placed on the soundness of the plan of organization which was conceived by Doctor Lewis. The State Board of Health is composed of nine members, five selected by the Governor and four by the State Medical Society, each for a term

of six years, and the terms are so arranged that not more than two expire during any one year. The soundness of the plan is evidenced by the fact that the health work of the state has never been seriously influenced by changing political fortunes. Doctor Puckett is State Health Officer of Oklahoma. The health work of his state has not been entirely free from political influence, and as a result developments have been retarded. It may not be feasible for him to induce the state legislature to approve a plan of organization identical with that of North Carolina. However, the underlying principles which have proven to be sound might serve as a basis for formulating a plan which will be sound and acceptable.

Dr. W. P. Jacocks, International Health Board, New York City: I have not lived in North Carolina for the last few years. The health work which I did here several years ago was along a special line, and, in a way, I can see the transition from that special hookworm work to the present county health organizations. Perhaps this meeting would like to hear of the results of the hookworm resurveys conducted in the southern states during the past three or four years. I do not remember the figures exactly, but some interesting data was found with regard to the present rate of hookworm infection among school children in 81 counties in 11 states. The original infection rate in those counties (1910-1914) was about fifty-five, and the resurvey rate (1920-1923) was about half that figure (27.8). Some of the resurveys were made in counties now having whole-time health organizations; and some in counties which have had no health work of any kind since the original hookworm surveys. There was no way to determine what effect the amount of health work that had been done in a county since the original survey had upon the reinfection rate, but it is quite true that the educational work done then and since, and which has been so well stressed here today as being so important, was a large factor in bringing methods of prevention to the attention of the general public. A great many of you probably have no hookworm problem in your counties now or, if so, it is merged into your general county health program. As I remember the resurvey figures, there was no county in North Carolina now having an outstanding hookworm problem, but there still are hookworm problems in some of the other southern states.

It is pleasant to be back again and to see familiar faces. I am glad to have had this opportunity to be with you, and have greatly enjoyed this meeting.

MUNICIPAL MOSQUITO CONTROL

John H. Hamilton
Health Officer New Hanover County and City of Wilmington

Since no community is free from mosquitoes at all times, we may consider the mosquito as a world-wide problem varying greatly in importance. There are several factors which influence a community when it considers its mosquito problem. The relative num-

ber of mosquitoes, their familiar distribution, their opportunity to transmit infectious material, the density of population of the community which they inhabit, and the character of the people all tend to determine the reaction of the community and the nature of the program which they will adopt.

Those of us who are engaged in health work think of a mosquito primarily as a vehicle for the transfer of infectious material; such as the plasmodium of malaria, the falaria, the causative factor of dengue or the causative factor of yellow fever. A great number of lay people are interested in the mosquito primarily as a pest. In some sections of the country, extensive mosquito control operations have been inaugurated almost entirely because of the pestiferous desire of the mosquito for a blood meal. In the southland, there are large sections where the malaria problem has a highly important health and economic aspect. Here most of our mosquito control operations are designed against the anopheles family. In practically all successful mosquito campaigns, however, regardless of the type of mosquito we start after, our campaign either progresses or degenerates into a fight against all mosquitoes. The public seeing that some mosquitoes can be controlled will demand that all mosquitoes be controlled.

In this paper, therefore, we will consider mosquito control without much regard to the type of mosquito. By so doing we simplify our consideration of breeding places and can state that all standing or slowly moving water to which a female mosquito can gain access is a potential producer of mosquitoes. Water which contains considerable organic matter, either in the form of sewage or decaying vegetable matter, will, because of its abundant food supply produce more mosquitoes than water relatively free from organic matter.

Natural breeding places include sluggish moving streams, ponds, lakes, marshes, swamps, etc. Artificial breeding places include cisterns, rain-barrels, fire-barrels, tin cans, house gutters, discarded automobile tires, flower pots, etc. In addition to the strictly natural and artificial breeding places, we have natural breeding places which have been modified by man, the best illustrations of which are certain types of rice fields and impounding reservoirs.

Methods of dealing which the different types of breeding places must of necessity depend upon the type and upon the possibility of using the methods of preference. The most desirable procedure of course is to get rid of the water either by drainage, filling, grading, and tiling, or, by abolishing storage places. In drainage we must consider topography of the land, the area of the water shed, the natural water courses, etc. We must plan the system so that the main ditches will be of sufficient size to carry the maximum flow-off and have laterals at sufficient intervals to convey the water as rapidly as possible to the main ditches. By so doing we will diminish the area of standing water even though we cannot entirely eliminate it.

In constructing ditches we must determine as nearly as possible the difference in elevation between the beginning and the end of the ditch and endeavor to dig it on a uniform grade. By having

our ditch dug to grade, we have a continuous flow of water instead of ponded water in places where we will have mosquito production in our drainage system. Preferably, ditches should be V shaped although under certain conditions this is not possible or practicable. The bottom of the ditch should be so constructed that when there is little water to be handled it will be closely confined and kept moving. The banks of the ditches should be of regular surface and free from vegetation. Vegetation should be cleared from an area about two to three feet on each side of the ditch. Ditches should be straight if possible. Where they cannot be straight, the turns should be sweeping curves so as to avoid the scouring action of water currents. For the same reason the smaller ditches should enter into the larger ditches at acute angles instead of at right angles.

Ditches may be dug by hand labor, by dredges, mechanical shovels, or by dynamite. In New Hanover County, all of our mosquito drainage ditches have been dug by hand labor at a cost of about twenty-five cents a cubic yard. Numerous agricultural drainage ditches have been dug with dynamite at a cost of about fifteen cents a cubic yard. These ditches would have required very little dressing by hand labor to make them good mosquito drainage ditches. The small lateral ditches must be dug by hand labor or by plough.

Since the ditch water must sooner or later enter natural water courses, we should see that these conform as nearly as possible to the scheme outlined for ditches.

Those of us who live in the tide water regions are confronted with drainage difficulties because of our inability to get sufficient grade for our ditches. There are two plausible solutions for these difficulties. The method of preference is to construct dykes, dams, and tide gates which will keep the tidal water from coming into our drainage area. In some places it is impossible for various reasons to construct dykes, dams, and tide-gates. Under such circumstances our ditches should be dug somewhat larger and more nearly level so as to let the water in and out as rapidly as possible. Mosquito larvae will not develop rapidly in moving water but will be swept out by the current.

The filling in of low places is not as a rule a part of a municipal mosquito control program. It is more properly the duty of the land owner and is generally done by our friends—the real estate developer.

Municipal improvement is not always an unadulterated blessing. It is not unusual for storm sewers and even sanitary sewers to become mosquito producers. Where we have storm sewers with sand traps, we will have trouble during continued dry weather because of the residual water in the traps. Frequently the storm sewer itself is not laid to grade and water will be impounded in the sewer. Sanitary sewers may give rise to trouble when the flow is sluggish. Trouble may also arise at the point where the sewage is discharged into the water course or at the sewage disposal plant.

The best time to prevent trouble of this sort is during the course of construction of these improvements as there is little that can be done after their completion.

Even with the best drainage system, we will still have areas of water which will produce mosquitoes. These places must be controlled by other means. We must clean the vegetation, driftwood, etc., away from the water edge and from the shallow places in the pond or lake. All floating or semi-submerged material should be removed, for it is in the shallow or protected water that most of the mosquito production occurs.

We cannot hope to eliminate mosquitoes entirely by mechanical means. We must also use a larvacide. Kerosene is the cheapest and best larvacide that has yet been used widely. It is more toxic for the larvae than the heavier oils. It should be applied in the form of a spray where mosquito larvae are being produced. Just enough should be used to produce a good film. Too heavy a film is simply a waste of oil. The objections to kerosene are, that it evaporates readily and that because of its transparency it is difficult to see it as a film. These objections can be overcome by diluting it with black oil such as summer and winter lubricating oil, or the discarded machine oil found at garages. These oils tend to keep the kerosene from evaporating and add color to it so that it is easy to detect the film. The dilution should not be more than one gallon of black oil to three of kerosene and generally should be one to four or one to five. The frequency and extent of oiling operations should be subject to control by inspection for larvae production. As a rule the territory should be covered once each week during the breeding season. The oiling crew should proceed on a regular schedule so that there will be no neglect of places.

Paris green has been suggested as a larvacide that has selective activity against anopheles larvae. The poison is mixed with dust or ashes and broadcasted. We have tried it in our own work but did not find it preferable to oil.

There are many fish which feed upon mosquito larvae. The top minnows, particularly gambusia affinis, are especially useful. All streams, ditches, ponds, and lakes should be stocked with them.

Artificial breeding places should be treated as nuisances and abatement forced upon those responsible. To do this we must have a staff of inspectors who have had some elementary training in mosquito biology. They must be keen observers and should be able to explain the reasonableness of their demand.

It would seem that no malaria control program would be complete without a screening campaign. It would be desirable to have a regulation requiring all dwellings and hotels to be screened adequately with sixteen mesh screen. Some of the poorer houses could not be effectively screened. There it would probably be desirable to use some mosquito repellant. Pine creosote has been used either as a spray or as a paint with satisfactory results.

A mosquito control program to be effective must be provided with adequate funds. This is not, however, prohibitive. At Wilmington we were confronted with unusual difficulties. Yet it cost

our community only about $55,000.00 to inaugurate the work in Wilmington and carry it on for the first two years. Here we have over fourteen miles of improved water courses and over forty-eight miles of new ditches. The cost of maintenance has varied from $6,500.00 to $8,000.00 a year for the last four years.

Probably one thousand municipalities have undertaken mosquito control. Very few have discontinued the work after it has been given a fair trial.

DISCUSSION

Dr. Floyd Johnson, Whiteville: It seems to me that in the county in which I work the draining of the territory is an impossibility. We can not get any draining there except through the drainage district system, with federal aid. Our area is large and our population and finances limited, so it seems to be altogether a screening proposition with us. I make the offer, especially to those people building new homes and building new enterprises, if they will allow me, to locate their new home or new enterprise and try to get it located in some section as great a distance as we can from the breeding places that we know it will be impossible for us to drain. I try to impress upon them the fact that the screening of the home is of as much importance as the roof. I have been able to get some interested. The average man and farmer usually in a section like that has forty or fifty acres of land, but very often, when he is ready to build his home, if you leave it to him he will build right down near a swamp, in order to get near the public road or near his marketing facilities, everlooking the fact that he has a better place on his property for his home. I try to go to him and get him to locate the home on the site that will be best for his health, and not near a place that will be suitable for mosquito breeding.

I think for the present in our section down there, with the amount of money we can raise and the area we have to cover, it is altogether a matter of screening and immunizing with quinine, and things of that kind.

Dr. H. A. Taylor, New Bern: I have listened to the reading of this paper with a great deal of interest. The Doctor has especially emphasized the fact that in dealing with mosquitoes we must not take into consideration the disease-bearing mosquitoes alone. This is due to the fact that it very often happens that, although they will breed by preference in selected bodies of water, when these bodies are disturbed they will by necessity select other bodies of water. I remember an instance of this kind very keenly. It was at Lake Village in Arkansas, during the year 1917. We made a survey in the spring and indicated on a map all bodies of water that we thought would breed mosquitoes. During the fall we made an additional survey for new streams and ponds. After this we formulated a plan of control based upon those surveys, and during 1918 and 1919 applied control measures. Finally we realized that we had driven our mosquitoes from small pools and streams, that would lend themselves to control measures, to the shores of a lake

that bordered the town. That made the problem very difficult, and we had paved the way for a general infection. It is true you can put in your artificial containers along the edge of streams. After control measures have been applied these mosquitoes will seek the less favorable places. One must take into consideration the problem as a mosquito problem, and deal with the mosquito as a whole. In dealing with the problem for the purpose of disease control, I do not believe that any one method alone is successful, but that we must have a combination of methods. Usually on the outskirts of the town where we have most of the propagation and the majority of mosquitoes we have homes that are poorly constructed, and it is impossible to get complete mosquito control. For those areas I see no better way than sterilization by quinine, because a majority of those homes are so loosely constructed that screening would not be effective. So it becomes the duty of the health officer to seek those infected in the homes and control malaria by sterilization with quinine.

Dr. Armstrong, President: We shall be glad to hear from our State Health Officer, Dr. Rankin—if I may be permitted to call him that.

Dr. W. S. Rankin: I think perhaps you would be interested to know some of the things that appear to be near at hand in public health work and which will have a very definite influence in North Carolina. We might as well begin to think on these coming events and begin to adjust ourselves, so that when they come we shall be prepared for them and prepared to welcome them gladly.

I think the biggest thing on the map today in public health work is the possibility of eliminating partisan politics from the control of health work and placing health administration on a professional plane, and I think that things will come to pass in from three to five years. Last summer Dr. Ferrell influenced five or six states that were especially interested in county health work to send representatives to Asheville, North Carolina, for a short meeting to consider the possibility of devising a grading system by which would be determined by national authorities, approved by those who were graded, the grade or class of work that they were doing. That was the first meeting that I know of in this country that had the very definite object of grading and classifying health work and lifting it ultimately above the plane of partisan politics and putting it on a high professional basis. That meeting adjourned after four or five days to meet subsequently at Christmas, but about Christmas things came up in the several states represented there to cause them to defer their meeting until this next summer. In the meantime certain health authorities interested from the city angle in public health work, more particularly the Committee on City Health Department Practices of the American Public Health Association, had gotten interested in the same thing. This committee is attempting to get the cities of the country to agree upon a score card rating for evaluating public health practices and to further agree upon a

time when that score card rating shall be applied to the weighing or measuring of city public health work, and, after a reasonable period for adjustments, to further agree to the publication of the results of the application of the score card. That movement has gone far enough, I think, to predict fairly safely that before this year is out there will be a small group of cities, somewhere between twenty and forty cities, that will come together and agree to three things: (1) To devise a score card for rating their work on the basis of one thousand points. (2) To decide upon the conditions for applying that score card. (3) To set a time when that score card rating shall be applied and published.

Then, what will happen? Some time about 1926 or 1927 there will be published in the health and industrial magazines of this country a classification of the health work of certain cities of the country. The cities will be published under two headings, the unclassified and the classified. The unclassified will have no national authority to check up their work or to grade them. They will be independent. Then there will be the cities that are classified. They will be classified as A, B, C, and D.

What will happen when that comes about? The candidates trying to get political control of a city will promise, among other things, that if elected they will continue their Class A health department. If the city is rated in Class C, they will promise to bring it up, if elected, to Class A. We shall do what has been done in medical education. You all know what has taken place in that field during the last ten or fifteen years. The American Medical Association got the medical colleges together and got them to agree to an audit of their equipment and their work, and to agree upon certain principles for rating. You know the improvement in medical education that has followed.

Usually, in talking about this matter of lifting public health work from a political to a professional level, I start what I have to say with a story of something that happened here in North Carolina. I think this is the first time I have ever told that story in North Carolina.

Dr. Buchanan is one of the most efficient health officers in this state. He will deny that part of my statement, but I will stand for that. He is a republican, which has nothing to do with his efficiency as a health officer. He is the health officer of Cabarrus county, in which I was born and raised and in which my father lives. That county left the democratic party in 1906 and continued republican until 1922. In the fall of 1922 the democrats recaptured the county. My father is an old before-the-war democrat. He happened to be at my home when he read the election returns. He said to me, "Well, Watt, that means that your friend Buchanan and the superintendent of the county home and all the rest of the radicals will have to get out." I wondered how I could butt in as state health officer and take care of my friend Buchanan, and not only that, but take care of the county health work. In the Cabarrus County Medical Society, a short time before the county health officer was to be elected, a member offered a resolution commending Dr. Buchanan for what

he had done and expressing the appreciation of the local society. One of the members objected to the resolution on the ground that the society's action might be given a political turn. Mr. James P. Cook ran in his paper, "The Uplift," a short editorial of some seventy-five or a hundred words in which he expressed in the most delicate and tactful language what he entitled "Just A Hope," the hope that the county commissioners would go rather slowly in making any radical changes in the health department. That editorial came to my desk. I seized upon it as an opportunity to write Mr. Cook a letter expressing the wish that his hope would be realized. In that letter I said something like this: "Of course, the commissioners have the right to get rid of their health officer and to put in whomever they please. But they have another responsibility, and some of their friends ought to call their attention to it—not only that of replacing their health officer, if they wish to replace him, but also that of replacing his record. Buchanan has a record that is not only his own record, that is an individual record, but he has a record that can be compared with that of twenty-six other counties in North Carolina. It is a comparable record, one that has all the elements of standardization and exact measurement. It is not only a county record, but a state record. It is in figures, that is to say exact and a matter of facts rather than opinions. Replace Buchanan—that is all right—but replace his record too. Dr. Buchanan's earnings on the dollar—which is the measure we used—are $2.17, while the average is $1.52. He has the third best record, only two other counties being ahead of Cabarrus. If the county commissioners replace Buchanan without replacing his record, some of those republicans may bob up a year from now and ask me to publish the record of Dr. Buchanan and compare it with the new health officer's record."

I left it to Mr. Cook to use that letter as he saw fit. I knew he would either publish it in the county papers, which would be the wrong thing to do, because it would have some appearance of a threat, or give it a little private circulation. Well, he did the latter. When that board of commissioners met they did not attempt to replace Dr. Buchanan. You say, "Well, you kept the board of county commissioners from playing politics." I did not. I protected Buchanan and also protected the board of county commissioners. That letter allowed them to retain an efficient officer instead of being influenced by selfish partisan politics.

That is the thing in the concrete that we must bring about on broad national lines. We must take county health work out of politics and must take state health work out of politics, too. Our state health work has always been on a non-political basis. We are not in politics; we are trying to improve human health and save life, and we do not care whether we use a democrat or a republican in doing that. The point I want to make is that the standardization of health work, the definition of values, the construction of a pair of scales on which health work can be weighed, a yard stick

that can be used to measure it, will do away with partisan politics in public health work and put it on a high and secure professional level.

In Ohio, in May, there will be a meeting of a small number of city health officials who will devise and agree upon a score card to be applied to their work in about two years. We can not apply it at once because some cities would stack up pretty badly, but if the city health officer is given reasonable time to adjust his work to an expressed system of group judgment values, he will be able to use the score card. If he finds his work is in Class B, he can go to his mayor and tell him what is needed to be done. The mayor will immediately see that it is to his political advantage to begin to put that part of his government—the only part which will be known throughout the country in comparison with other cities—in Class A.

This idea of classifying or standardizing health work, so that it can be measured and weighed, so that the inefficient can be weeded out and the efficient recognized, is really coming. I expect to see North Carolina health work published in some national magazine, vouched for by some national authority, as being in Class A, B, C. or D. In other words, we are going to professionalize public health work and put health departments on a basis of efficiency, so that citizens will at least have a national comparative rating of one particular division of their government. That is in sight; it is on the horizon. It is a matter that affects us all.

OBSERVATIONS ON HEALTH WORK IN NEW YORK CITY

S. E. Buchanan, M. D.
Health Officer Cabarrus County, Concord

I feel somewhat like a fool in getting up after Dr. Rankin talked about me in the way he did, but I just happened to be on the fence and he helped push me over on the right side. I still have that letter in a safety deposit box.

In February Dr. Armstrong and I went off on a tangent, as some thought, and went up to New York to investigate diphtheria control. We saw Dr. Park, and he put us in touch with Dr. Zingler and others in the Schick work. I think that is one reason Dr. Armstrong made his statement this morning about the five doses of toxin-antitoxin. Personally, I know I am not going to give five doses, and I shall not ask any one to do it. But I am going to have the children Schicked four or five months after the toxin-antitoxin, and then I shall know what I have.

Then, about the reaction, I found we had been on the wrong track entirely. We thought the ones having the reaction were the ones that needed it, but you can look at the Schick test and tell just exactly what kind of a reaction the child will have. You can tell the parent that the child will have a sore arm, and tell them the redder the arm, the worse the child needed it.

From there we went down to the Maternity Hospital. They have twelve or fifteen nurses there, most of them volunteer nurses sent in there from other departments to learn the work. They are paid a small sum, fifty or seventy-five dollars a month. The territory is divided up into sections, and each nurse is required to have so many prenatal cases on her list all the time. I think the number is forty-eight. When one is confined she has to get out and find another to take that one's place. She visits the homes and gets the confidence of the people, gets the women to come up to what is called the mothers' club. When they come up the physician working for the association gives them a thorough physical examination —and when I say thorough I mean it is thorough, not a hop, skip and jump as it is with most of us. Then a copy of this examination is sent to whomever they have employed as their doctor. This examination is repeated every month and the results sent to the doctor. If everything goes all right the doctor very often does not see them until confinement. When they come up there the nurse meets her prenatal cases at the door. If there are any children with them, the children are taken to another room. The mothers go in and have their demonstration. It is as nice a piece of work as I have seen, I think. It works as smoothly as clock work. I am going to try it. My idea is to go out in the industrial sections and see if I can not organize the women's Sunday school classes into a mothers' club. I may not tell them what I am after until I get them together. Then I shall try to organize just as they do in New York. When I get them to coming I shall try to ease the stuff to them. I shall try to have a maternity center. Even then each nurse will not have as many cases as in New York.

I visited the tuberculosis department and other departments, and found they have just the same troubles as we have down here. They have people to buck them just as they buck us. It is very interesting to go up there, just for business, not for pleasure. They will certainly show you around. It used to be when I got word from the state office that some one was coming down to see my county work, of course I did not say any Sunday school words, but I thought a whole lot, but since I have been up there I have changed my mind.

DISCUSSION

Dr. C. W. Armstrong, Salisbury: I said my say this morning about the Schick proposition, in which I am very much interested. I was interested in seeing that in New York. I am completely sold on the Schick test, for I know what it will do for you. I know it will increase your toxin-antitoxin immunizations, and I know the people appreciate something of that kind. The difference between giving five doses and telling the people you are immunizing them, and giving the Schick test, is the difference in doing things in a scientific manner and doing the thing in a haphazard manner. I can not get it into my head but that, if we go into the field and attempt to immunize them without the Schick test, we are doing it in a haphazard manner. We do not do the Schick test on children

under six, because practically all are positive. We tell them to give three doses of toxin-antitoxin and then, after five or six months, give the Schick test. They tell me in New York when you once get immunity it never changes after that. It seems to be a life-time proposition. I do not mean to say that Dr. Shore is not doing the right thing. Probably he is, but I feel that for the full time departments, advocating five doses is not the right thing. For part-time counties it may be all right, but I can not feel that it is right for the whole-time health officer.

As Dr. Buchanan said, we were shown every possible courtesy in New York, and the bigger the man the more courteous he was, as a rule. I notice there that the great work they are doing now is on children. They say the grown man is able to take care of himself, or, if he is not, he has already lived the larger part of his life. They are throwing around the adult population some protection from diseases that may become general, but are doing the great part of their work with children. I feel that that is where we should concentrate in North Carolina.

On the whole, it was a very pleasing and very profitable trip.

In line with that maternity and infancy program, I want Dr. Bonner, if he will, to give us a short outline of what he is attempting to do in North Carolina along that line.

Dr. K. P. B. Bonner, Director, Bureau of Maternity and Infancy, State Board of Health, Raleigh: Dr. Armstrong somewhat surprised me by asking if I would not give a statement in regard to the work we are trying to do, because I did not expect to be called upon for such a statement at this time.

As you all know, this work began operating on the present basis in April, 1922, and since that time has undergone some few changes in the plan of development. The latest change has been the attempt to develop the work by the system of county units. In our county units we are attempting the plan of special training of nurses whose activities are restricted to maternity and infancy work only. We have since July of last year started on an entirely new plan of developing a corps of nurses, in that we are taking nurses from private duty work who have previously had no public health training and training them under medical supervision. To do that has necessitated placing a medical officer on the ground where the work is to be done. In line with that policy the bureau of maternity and infancy has now three medical field supervisors on duty in various counties. To do that it is necessary for the medical supervisor to spend from two to three months in a county, for the plan by which we operate requires that much time. Under our plan we do not undertake work in any county without first laying the plan before the organized medical profession, securing their approval and securing their agreement to participate in the work. That means not only their approval, but they must agree to participate actively in the work, because our plan contemplates the organization and conduct of baby conferences or centers as an integral part of the work. Two of our medical supervisors also visited the points visited by

Doctors Buchanan and Armstrong. We realized that it was necessary to organize and conduct permanent prenatal and baby centers. You can not do work of any value unless you have that as part of the work. In line with that, and considering the tremendous advances and progress made in Pennsylvania and New York, we realized that that must of necessity be incorporated in our plan of work in this state. That, briefly, is the outline of the plan upon which we are developing the work in North Carolina.

In talking to the secretary of the Child Welfare Federation in New York, she advised me there were 158 various organizations interested in child welfare in New York. That many organizations operating and functioning brought about a condition whereby there was a tendency toward overlapping and conflict of work. So they organized a federation to take them all in, which districted the city of New York so that this supervision of the health of mother and baby is available to every part of the city. That organization has assumed the responsibility for the routine supervision and preservation of the health of mothers and babies, and as a result of that the infant mortality has dropped from about 215 per thousand births annually to about 71. In spite of the great congestion in the city of New York, with a cosmopolitan population of most ignorant people, people from other countries, in the face of all those factors and of almost intolerable sanitary conditions in parts of the city, they have reduced their death rate.

MIDWIVES

E. R. Hardin, M. D.
Health Officer Robeson County, Lumberton

The practice of midwifery is a complex problem of great antiquity. Its history runs parallel with the history of the people, and its functions antedate any record we have of medicine as an applied science. Midwives as a class were recognized in history from early Egyptian times. Practicing midwifery is closely bound by many ties to many social customs and prejudices. The practice of midwifery by the medical profession did not begin in Europe until the sixteenth century.

The time has come when the problem of the midwife must be reckoned with. In the past the responsibility for the midwife has been almost entirely ignored. The midwife has been cussed and discussed, but it is a deplorable fact that so little of a practical nature has been accomplished. There has been great improvement in standards of health administration, in domestic and civic sanitation, a widespread knowledge of cause and manner of infection; and the enactment of laws and penalties relating to the practice of midwifery in many states, and yet the maternal mortality has steadily increased during the last decade. Statistics show that during 1913 about sixteen thousand women in the U. S. died from conditions dependent on child birth, and that in 1918 twenty-three thousand women gave up their lives in the same way. In 1921 the

maternal death rate for our country was higher than that for every foreign country for which we had statistics, except Belgium and Chile. Polak is authority for the statement that more than 61% of all gynecological surgery is direct result of poor obstetric practice. Thus in addition to the high mortality thousands of women are crippled and subjected to operations each year as the inevitable consequences of child birth under existing midwifery conditions in this country. Much of this mortality and morbidity can be prevented by proper handling of obstetric cases, as may be seen from the practice of obstetric specialists and the various obstetric hospitals, and dispensaries.

The great loss of human lives, and economic wastage dependent on it, are due to ignorance on the part of the people and the economic impossibility of providing for the vast majority of women, competent obstetric care for what they are able or willing to pay. To provide trained workers is not sufficient if the people through ignorance will not employ them, or lack of funds can not pay them. The problem is to provide competent obstetric care for every childbearing woman in the country for what she is able to pay, and at the same time educate them to make use of this service.

The economic factors involved are so large and so complicated that it is doubtful if relief can be expected without municipal, state and perhaps federal aid. The Sheppard-Towner bill for the promotion of infant and maternal welfare is the first step in this direction.

It is a matter of common knowledge that about 40% of all confinements in this country are cared for by midwives. These midwives are, except in rare instances, ignorant, untrained, incompetent women, and some of the results of their obstetric incompetence are unnecessary deaths and blindness of infants, and avoidable invalidism, suffering and deaths of mothers. In most European countries the midwife has been a fixed institution for hundreds of years, and receives a strict course of training and supervision by the government. The training of the midwives in Germany, where they are required to spend six months in a government obstetric hospital under the instruction and supervision of trained obstetricians, is far superior to that which the great majority of physicians receive in this country before graduation. Holland, France and Italy give a two year, and Norway, Sweden and Denmark a one year course of training to their midwives. England faced this problem and solved it as late as 1902 by the establishment of the "Central Midwife Board," by an act of parliament entitled "An act to secure the better training of midwives and to regulate their practice." The system is somewhat similar to that of Germany; the midwife being trained in an obstetric hospital for six months; licensed after examination by the Central Midwife Board, and their work supervised by the government. New York has established a training school for midwives, but it is too small to more than touch the problem in the city alone.

From all information available it seems that what is most needed in this country is the better training of the physicians in obstetrics; not to try to educate the midwife to the extent of the European

countries. If this is done she may become a fixed element in our social and economic system and assume a legal status which can not later be altered. It is at present impossible to secure cases sufficient for the proper training of physicians and nurses in obstetrics, since about 75% of the material otherwise available for clinical purposes is utilized in providing a living for widwives. Broadly speaking three standpoints are taken in this country; first, the midwife must be abolished; second, the midwife had best be ignored, and left to her own devices; third, the midwife should be raised to a higher plane by proper state control and education. The first proposition is impossible until some better substitute for the midwife is provided to care for the large number of women she attends in child birth. The second proposal is unworthy of consideration. The third proposition is at the present time the only practical way of dealing with the midwife problem; whether it has for its object the temporary safeguarding of helpless women and children or finally the elimination of all but the educated midwives. Since the evil of the moment cannot be eradicated, the danger to the public can be minimized by some provision for the proper regulation, supervision and control of the midwife by the state. The methods of regulating midwifery may be divided into three classes; restrictive measures carried to indirect abolition; educational restriction, and finally registration and supervision. The purpose of regulation by educational restriction, generally speaking, is not to disturb the existing body of midwives, but to gradually replace them by means of progressively elevated requirements and standards, by a smaller body of well trained women. This method may be carried in the course of years to the point of practical abolition. The primary object of registration is to bring the midwives under the supervision of competent officials, so that their work may be subjected to some measure of supervision.

In accordance with the last two methods of regulation, our county health department five years ago passed certain laws governing the practice of midwifery in Robeson county. The manner in which the midwives have responded to these regulations has been encouraging; but unfortunately I have not had the service of a nurse to follow up the work in the field. I have drilled the midwives in the laws that the state and county have passed regulating their work, and have emphasized particularly the things they must not do. Regular meetings have been held at intervals of three to six months during the past five years for all midwives in the county. The attendance on the whole has been good; out of 128 registered there has been an average attendance of 90 at all the regular meetings during the five years. Many of our midwives have to come a distance of 20 to 30 miles. In Robeson county we have three races, white, indian and negroes, and therefore three races of midwives. The youngest midwife registered is 25 years old, and the oldest 77 years. A recent article in the American Magazine on census taking stated that there was only one occupation that men are not listed for, and that was midwife. We have three of these rare specimens, or have had until we eliminated them. Out of 128 midwives reg-

istered over one hundred are colored, and only 38 can read and write; the average age of each is 56 years, and the average number of confinements attended by each midwife annually is 9. Wassermanns were taken on 63 midwives, and 13 showed positive. Two midwives have been prosecuted for failure to put silver nitrate in babies eyes, and their license revoked. In these cases the babies developed ophthalmia neonatorum. During the five years 31 have been eliminated by death, disability and other causes.

Our plan has been to hold the meetings at the county court house for all midwives practicing in the county. When any of the midwives fail to attend, they usually come in a few days after the meeting or are ordered in and given individual instruction. In this way nearly all of the midwives have been questioned as to what they do from the time they reach the home of the woman in labor until the patient is delivered, and they are ready to leave. The majority of them have made a creditable showing on the quiz, and have demonstrated the manner in which they use silver nitrate solution furnished by the state for the babies eyes. Two of the midwives stated that they had been dissolving the wax capsules in warm water and then putting the water in the babies eyes. Five years ago the great majority of our midwives were putting grease of some kind on the babies' cord or on the genitals of the women they served. Midwives who continue to ignore instructions and use grease on the women or the baby's cord, are being eliminated, as soon as such facts come to our knowledge. The midwives have all been given a list of the things they should take with them on their cases. At a recent meeting all the midwives were asked to bring their equipment with them, and about 50% of them made a good showing on this inspection. It is a significant fact that none of them had any medicine or drugs except the lysol, bichloride or boric acid powder they were told to get. Realizing all too well the extreme limitations of this large body of ignorant women who are attending a large per cent of obstetric cases in our county, I have tried to make them understand their grave responsibility and to emphasize the great danger to the mother and baby from neglect of cleanliness. I have emphasized the fact that it was their solemn duty and responsibility under the law to have the family call a physician when any complications occur. They have been told that it was dangerous for them to make vaginal examinations, and give douches; that it was against the law and they would be prosecuted if they violated this law. Our midwives now carry sterile gauze and cord tape for the babies cord, a scrub brush, sterile cotton, lysol and antiseptic soap, for cleaning their hands and the genitals of the patient.

The great majority of our midwives have a wholesome fear of the law and the "State Doctor". In the beginning some of them were disposed to criticize the doctors. I have tried to make them understand that they should only attend normal labors, and that the doctors were their best friends, and their last court of appeal in time of trouble. I am sure that the large number of women in Robeson county who are attended by midwives are in safer hands

now than they were five years ago. I am also persuaded that the great body of midwives in the county have a more wholesome respect for the doctors than they did five years ago.

The midwife of Robeson county is rather typical of the midwife of the south. She is far below the European midwife in intelligence and no training under the sun could make her a competent obstetric attendant. Therefore it seems that any scheme for improvement in obstetric teaching and practice, which does not contemplate her ultimate elimination, will not succeed. This is not alone because midwives can never be taught to practice obstetrics successfully, but most especially because of the moral effect upon obstetric standards. Therefore it seems that the most satisfactory way to abolish the more objectionable part of the midwife problem is to recognize the midwife, place her under control and the state educational requirements, and to gradually elevate these to the extent that only the more intelligent class of midwives shall remain to practice. The history of all reforms will show the difficulty of displacing old established occupations and social customs by legislation or other restrictions, unless a certain amount of time is allowed for the establishment of the new custom and the displacement of the old, and unless such restrictions are brought to bear upon actual rather than ideal conditions. The elimination of the midwife is a great task, and one which none of us may live to see accomplished; but we must remember that somewhat similar measures have recently accomplished much for medicine in this country.

Upon motion of Dr. R. S. McGeachy, the secretary was requested to have Dr. Hardin's paper on "Midwives" multigraphed and distributed to the members of the association as soon as possible.

Dr. L. J. Smith, Wilson, presented a request from Dr. G. M. Cooper, assistant secretary of the state board of health, for suggestions and constructive criticism in regard to The Health Bulletin published by the board. Upon motion of Dr. R. L. Carlton, the association voted to go on record as approving and indorsing the efforts of Dr. Cooper in editing the Bulletin.

Dr. Armstrong, President: It is with a great deal of pleasure that I introduce to you the speaker of the evening, Dr. John A. Ferrell, of the International Health Board.

ADDRESS

John A. Ferrell, M. D.
Director For The United States International Health Board,
Rockefeller Foundation, New York City

Mr. Chairman, Ladies and Gentlemen:

The invitation to be with you on this occasion is appreciated. I feel disposed to inquire what I should say and would do so if I did not have in mind a certain minister's experience. In beginning his

sermon he asked of the congregation, "Now, what shall I say?" Someone from the rear who doubtless dreaded what was to come spoke out and said, "Say amen, you old fool, and sit down." I did ask Doctor Rankin privately. Knowing me well, yet manifestly sympathetic, he suggested that I reminisce and ramble. He of course knew that I would do this anyway.

The N. C. State Board of Health Bulletin for April carries an article by Mr. Wilson discussing the organization, activities, and growth of county health work in the State. The movement, he stated, began in June, 1912, when Guilford county employed a full-time health officer. It is easy for me to recall the occasion and to go back five years further to 1907 when I began serving Duplin county—with the title of Superintendent of Health. The arrangement was literally *part-time*. The county did not pay for much of my time and I of course sold it that part which I could not advantageously devote to private practice.

My routine duties consisted in giving medical attention to the inmates of the jail and county home and to paupers. I was not expected to do much to protect from epidemics those who were well and productive. At any rate I assumed this to be the case and no one questioned the assumption. When smallpox appeared I went to work in earnest but generally the epidemic was well under way before its presence was discovered. Then according to custom I chased it; established quarantine which was not observed; violations of quarantine were reported to the authorities and the solicitor but there were no prosecutions. Houses where cases occurred were fumigated, that is to say, formaldehyde gas was generated in them, although as a rule they were too loosely constructed to allow sealing them to a degree that would permit effective fumigation. I regarded the procedure even then as practically useless. The water, soap, and sand used on my advice in cleaning the houses and their contents probably did more good. For the protection of the public health the county paid little and in return received little.

However, by the fall of 1909 the conditions showed improvement. When I strongly urged it a vaccination campaign in sections of the county where smallpox was known to exist was authorized. Those who would consent were promptly vaccinated. To those who refused vaccination at first I made a second visit and carried with me a justice of the peace and a deputy sheriff. The latter went in a two-horse wagon prepared to carry to jail all who refused vaccination and had to be indicted. Several were placed in the wagon, and started on the road to jail but one by one they all consented to vaccination before reaching it. The deputy sheriff had a hand-to-hand encounter with a negro man and his wife whom I had indicted. As they were armed with a shotgun the assistance of the justice of the peace and myself was required to turn the tide of battle. This procedure, although considered radical, promptly gave us an immune but a sore-armed community.

Early in 1910 I became associated with Dr. Rankin in the state health work. Doctor Shore who is a real old timer was already conducting the laboratory work. The state appropriation for health

work then approximated $22,000 yearly, an amount much smaller than is now being spent in each of several counties. At that time a state was regarded as progressive which had a full-time health officer, and I do not recall that there were any full-time local health officers except possibly in the large cities. The change that has taken place is truly remarkable. The April Bulletin shows that you now have thirty-three full-time county health organizations serving more than 50% of the state's population; and that for this phase of its work alone the state is appropriating $72,427 yearly. The amount of the gross expenditures shown for all public health work in the state is even more striking.

State Board of Health—general appropriation	$ 425,000
State Tuberculosis Sanatorium appropriation	135,000
31 County Health Departments—funds all sources	310,000
6 City Health Departments—funds all sources	140,000
Total	$1,010,000

Just consider that a growth in public health funds from approximately $50,000 per year to more than $1,000,000 per year has occurred in the state within fourteen years. I do not know of a record anywhere which approaches it. Rapidly increasing appropriations would not be made from year to year unless the taxpayers were satisfied with the investment. Lives have been saved, sickness has been prevented and health has been promoted to a measurable degree.

The State has been extremely fortunate in having a sound plan of health organization. You have escaped the evil influence of partisan politics which have greatly retarded public health progress in several states. I could mention a half dozen which now have their health work greatly disorganized because their plan of organization was not as wisely conceived as was that of North Carolina.

In order to attract men and women of the best type to health work it must appeal to them as a stable profession, where ability will be recognized. There must be a continuity of policy and of service. These essential conditions are had in the fields, health, and education to a most satisfactory degree when there is a competent non-partisan board to fill the executive positions and to pass upon general policies. The board should be composed of from six to twelve members wisely selected, whose terms of office are so arranged that not more than two will expire in any single year. Having a sound plan of organization and a creditable appropriation the public health machinery should produce results. A well trained personnel is also absolutely essential and its development requires much time.

Mr. Wilson's article points out some of the apparent results. The state's typhoid death rate per 100,000 population was reduced from 69 in 1911 to 11.2 in 1922. Compared with the remainder of the country the reduction has been quite significant. It is necessary in order to correctly appraise apparent results to have controls.

We should know what would have happened in similar areas in the absence of the special health work. The advance of agriculture, for example, is bringing about the elimination of malaria in some localities. The death rates from typhoid fever and tuberculosis are falling throughout the country and the reduction by states does not correspond uniformly with the expenditures made specifically for their control. Hence a number of factors may play a part in producing a given result. As the health machinery expands and the expenditures grow the health officers will be in duty bound to strive to maintain efficiency in their procedures. More satisfactory methods for the evaluation of results must be evolved. Doctor Rankin with your assistance developed a plan for showing the activities of each county health unit in terms of dollars and cents. You are now attempting the next step, namely, to show also the *health benefits* yielded per dollar spent. Directness of working methods must be secured if waste of energy is to be avoided. North Carolina, for her own benefit and for the guidance of other states, should lead the way. She has the largest number of full-time county health organizations of any southern state and the work has been under way longer than in other states.

The slogan, "health is purchasable," may be seen in nearly every health bulletin. What methods for satisfactorily proving it can be employed? How can it be shown convincingly that an activity is productive of satisfactory results?

The mortality and morbidity statistics are commonly considered to be satisfactory as a basis for measuring the value of health work. The extent to which they can be relied upon should be determined. It now seems that many useful items of service will not be reflected promptly, if at all, by them.

The gross death rate alone will not necessarily reflect the healthfulness of a given area or the efficiency of its health service. Many people go to southern California in advanced life because of its pleasant climate and healthfulness. Many of them die there of old age or diseases that are not communicable and as a result give rise to a high death rate. The reduction of the general death rate for Guilford county from 1915 (13.1) to 1922 (12.4) was less than the reduction of the rate for the state and there was a slight increase in Lenoir's rate. Yet we believe the health work of these counties, if fairly measured, would show significant results. If an analysis of the general death rate should be made that would show by years the deaths by age groups and by specific causes, the value of the work would be apparent. The history of the death rate of infants, for typhoid fever, and for diphtheria, for example, should reflect the character of the health service.

Morbidity statistics should be of greater value in evaluating health work than the death rates if they were accurately and completely collected. Progress is being made in obtaining them, and in many localities they are satisfactorily collected and serve a useful purpose in guiding activities as well as in showing the results of the work.

Some health authorities recognize the limitations of these statistics as a basis for evaluating health service and are giving consideration to other terms of measurement.

The correction of physical defects of children is generally recognized as a valuable service. Repeated observation of children having defects corrected show increased vigor and growth, more hemoglobin, fewer absences from school, improved general health, and growth in intellectual efficiency and yet the results of this work may not be reflected promptly if at all in the morbidity and mortality statistics. How can the value of this service be translated into numerical terms? It is only one of many useful activities for which a basis of appraisal is sought.

Hookworm disease, generally, is not a reportable disease. Cases might be reported if required but very few if any deaths would be attributed to it. Yet in undermining health, sapping vitality, and preparing the body for the invasion of pathogenic bacteria it is of real importance. Progress in measuring results in its control has been determined by means of surveys. Each county survey included an examination from 500 to 1,000 children taken at random. Subsequently similar surveys would be made in the same county. The difference in the percentage of infestation on different dates indicated the change that had occurred. In 81 counties of the south the infection prior to 1915 was 55%, whereas subsequent to 1920 it was 27.8%. There had been a reduction of 49.5% in the amount of infestation. Measuring results in this way is expensive, but justifiable. Some method for measuring results is absolutely essential in all fields of administration.

Malaria likewise is important in many localities far beyond what vital statistics reflect. The principle of survey and resurvey likewise has to be employed as a means for defining its importance and for showing progress in its control. It is more difficult to measure the amount of malaria in a community than the amount of hookworm disease. The blood examination, the spleen examination, and the clinical history may all be required to get a picture of actual conditions that will satisfy all scientists. The use of the spleen index as a basis for determining the malaria situation at any given time and place is growing in popularity in the south. It has been extensively employed in the tropics.

The problem of developing a system for the appraisal of public health service in terms of life, health, usefulness, and happiness is worthy of your serious consideration.

Lively discussions can be heard on every hand regarding the amount of money which should be expended for health service. In certain localities a percapita amount of twenty-five cents seems high and is difficult to raise whereas in others the amount may exceed two dollars. In certain fields of business the more capital that is invested in a production unit the larger will be the return, up to a certain point when the maximum is reached. The yield on capital, if increased beyond this point, will diminish. It has been pertinently asked if the law of diminishing returns will operate in health service and if so how shall be determine the amount that

can be spent in order to get the best result. We frequently hear health officers remark "if we could get more money our work would be more efficient." Up to what point will this be true? The question should be settled by you health officers in the school of practical experience. In general I think it is best to lean toward the conservative view. If a practical test should warrant larger expenditures than we now advocate growth can occur along sound lines and serve as a stimulation to the workers. If retrenchment should become necessary the change would not be very agreeable or easy. Probably we are expanding the program and increasing its cost as rapidly as conditions justify.

The order in which existing health problems should be approached is one of the subjects that is receiving considerable attention. Sanitation—the protection of food and water from contamination and the safe disposal of human excreta—has yielded a striking result as reflected by the reduction in the typhoid deaths. Where sanitation is still a public health problem it will yield a large return per dollar wisely expended. The control of certain diseases—diphtheria, smallpox, and malaria, for example—which are well understood and can be successfully combatted likewise yield measurable results and no one questions the wisdom of spending money for their control. Moreover the infant death rate can be made to yield to intelligently applied measures.

The list of diseases and problems contains many which are not so well understood. Our procedures for dealing with them are less clear cut and in some instances do not rest upon a scientific foundation. Our knowledge regarding cancer, nephritis, and heart diseases is too limited to permit the development of measures practical for the use of the average health organization. Some practices have no very definite foundation, others have. How are you to determine which you shall adopt and which you shall not follow?

As Dr. Rankin forecasted I have rambled, but have raised certain questions which I hope you are already considering. North Carolina has a large group of experienced, capable, serious minded health officers, who are prepared to solve many of the perplexing problems. I feel that I can come here for counsel. It is for this purpose I am with you today to ask questions. I appreciate the privilege. I have learned much. You are rendering a real service to your fellow-men by saving life, promoting health, and raising physical, social, and intellectual standards. I congratulate you.

Dr. Armstrong, President: I assure you, Dr. Ferrell, that it is always a pleasure to have you with us. We enjoy your very presence. This is the first time we have ever been able to get you to talk to us very much, and I am sure we have all enjoyed your remarks.

REPORT OF COMMITTEE ON PRESIDENT'S ADDRESS

Dr. R. S. McGeachy, Chairman: We wish to heartily indorse the address of the President and commend it to the serious consideration of the members of this association.

I was instructed to say a little something about the cost equivalent credits. There ought to be some system devised so that each and every agency, western counties, central counties, eastern counties, etc., will take the identical credit for work done. There should be no question as to what to take credit for and what not to take credit for. I admit there are some definitions in that definition sheet that to me are not clear, and that let the bars down. I think one or two men here will bear me out in saying that in Lenoir county I have the most conscientious sanitary officer to be found anywhere. That man should have credit for his office conferences. I have known him to sit for an hour going over plans for septic closets, for privies, etc., but he gets no credit for that at all. The only thing for which he gets credit is if he accomplishes something which he sets out to do. Then there is another item, treating indigent cases, treating venereal diseases, etc., $2.50. Then we get credit for mercurial inunction. Under that definition I believe we could take credits on three counts. I don't do it, but couldn't I do it? Then very often a man will come in and I give him a prescription, give him a tube of blue ointment, and give him a shot, all at the same time. We feel that we ought to have, if we are going to continue the thing, a definite, distinct system of credits, so that not one of us could take anything except what the other man is taking, and so that all will be on identically the same footing. How it can be worked out I do not know, but that form of definition is not clear. I had to call one of the nurses down the other day because she was running in and asking a woman how her garden was getting on, and taking credit for a home conference. That is not right. You have to give definite instruction on how to take care of the baby, or something like that. If you just run in it is not a home conference. That definition sheet should be amended so that it will be clear to everybody, so that each one of us will be on the same footing.

REPORT OF COMMITTEE ON RESOLUTIONS

Your Committee on Resolutions beg leave to submit the following for adoption by this association:

I. That the North Carolina Public Health Association extend to the management of the Hotel Sir Walter our sincere appreciation for the many courtesies shown us during the session of our fourteenth annual meeting.

II. That this association extend to Dr. R. H. Lewis our appreciation for his invaluable services in the establishment of public health work in North Carolina on a sound and progressive basis; also for his active and energetic prosecution of his ideals, as evidenced by his presence in our midst today, inspiring us to go forward with renewed energy with the tasks assigned us.

III. That this association extend to Dr. Carl Puckett, State Health Officer of Oklahoma, its sincere good wishes for the success of his efforts in the organization of a public health program in his state, and that we, individually and collectively, extend to him the benefits of our experience in this work.

IV. That this association voices its genuine pleasure in having with us Dr. John A. Ferrell of the International Health Board, and for his continued interest in the state of his birth, as shown by his regular attendance on our annual meetings.

V. Realizing that the success or failure of our association is largely dependent upon the attitude of the members of the State Board of Health, we wish therefore to acknowledge our sincere gratitude for their presence here today, and the keen interest they have taken in the discussion of the various phases of our activities.

Committee { L. J. Smith, Chairman
C. L. Outland
P. G. Parker

The report of the committee was adopted.

COMMITTEE ON VISITORS AND NEW MEMBERS

Dr. E. T. Hollingsworth: So far as the committee has been able to ascertain, all those present have registered.

ELECTION OF OFFICERS

The following officers were elected:
President: Dr. L. L. Williams, Mount Airy.
Vice-President: Dr. Sidney E. Buchanan, Concord.
Secretary: Dr. F. M. Register, Raleigh.

Adjourned.

INDEX

A

PAGE

Address—*John A. Ferrell, M. D.* 52
Armstrong, Dr. C. W. 5, 19, 42, 46, 52, 57

B

Bonner, Dr. K. P. B. 47

C

Committee on Visitors and New Members 59
Crowell, Dr. A. J. 33

D

Duties of the Health Department from a Health Officer's Point of View—
D. E. Ford, M. D. 16
Discussion by—
Dr. C. L. Outland 18
Dr. Ford 19
Dr. C. W. Armstrong 19
Dr. Puckett 19

E

Election of Officers 59

F

Ferrell, Dr. John A. 35
Ford, Dr. D. E. 15, 19

I

Informal Talks and Discussion 33
Discussion by—
Dr. Richard H. Lewis 33
Dr. A. J. Crowell 33
Dr. J. Howell Way 34
Dr. John A. Ferrell 35
Dr. W. P. Jacocks 37

J

Jacocks, Dr. W. P. 37
Johnson, Dr. Floyd 41

L

PAGE

Lewis, Dr. Richard H. 33

M

Mangum, Dr. Charles S. 27
Maternity and Infancy Work in Granville County, Its Inspirations and Difficulties—*J. A. Morris, M. D.* 11
Discussion by—
Dr. W. A. McPhaul 14
Dr. R. S. McGeachy 14
Dr. C. L. Outland 15
Dr. D. E. Ford 15
McGeachy, Dr. R. S. 14, 57
McPhaul, Dr. W. A. 14, 31
Midwives—*E. R. Hardin, M. D.* 48
More Restricted Program of Public Health Work in the Co-Operative Counties —*C. W. Armstrong, M. D.* 5
Municipal Mosquito Control—*John H. Hamilton* 37
Discussion by—
Dr. Floyd Johnson 41
Dr. H. A. Taylor 41
Dr. Armstrong 42
Dr. W. S. Rankin 42

N

North Carolina Public Health Association 3

O

Observations on Health Work in New York City—*S. E. Buchanan, M. D.* 45
Discussion by—
Dr. C. W. Armstrong 46
Dr. K. P. B. Bonner 47
Outland, Dr. C. L. 15, 18

P

Puckett, Dr. 19

R

Rankin, Dr. W. S. 42
Report of Committee on President's Address 57
Report of Committee on Resolutions 58
Report of Secretary—*F. M. Register, M. D.* 9

S

PAGE

Some Phases of Preventive Dentistry—*J. S. Spurgeon, D. D. S.* 20
Discussion by—
Dr. Charles S. Mangum 27
Dr. Spurgeon 28
Spurgeon, Dr. 28

T

Taylor, Dr. H. A. 41
Transactions of the North Carolina Public Health Association 5

V

Value of Voluntary Organizations in Public Health Work—*Katharine Myers, R. N.* 28
Discussion by—
Dr. W. A. McPhaul 31